BREAK-IN

July/August 2013

The Official Journal of the
New Zealand Association of Radio Transmitters (Inc.)

Dedicated to

# Amateur Radio and Electronics

in New Zealand since 1928

## In this issue:


- Near Field Interference from Transmitting Antennas
- EME on 1296 MHz
- Hacking the VK5JST Antenna Analyser
- Experimenter notes
- Fun with a Baofeng UR-5R handy-talkie
- A Chatham Island experience
- AGM minutes
- NZART Conference 2013
- Noisy new light fittings
- ZL Crossword 23


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*The term **break-in** refers to a system in CW whereby the transmitting station can hear the other station's signal during "key up" periods.*

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# From The Editor

John Walker ZL3IB
<editor@nzart.org.nz>

I am writing this editorial and trying to compile the next issue of *Break-In* under rather trying conditions. The past two weeks have been rather traumatic for Sheila and I because we have had to vacate our home to allow for earthquake repairs. This involved a total clearance of all our goods and chattels but fortunately I did not have to clear my shack; that would have been a Herculean task! We were fortunate in being able to find suitable temporary housing for six weeks and I was able to arrange for our telephone and internet (after several days delay) connections to be redirected to our temporary address.

Most of us will have downloaded programs from the Internet that are related to our hobby. In his issue of *Break-In* we welcome Jim Reed ZL1LC, who has offered to compile a new column which will offer brief reviews of recent new radio and electronic related programs on the net. Please support Jim in this new venture; I am sure that we will all find something of use to us.

Finally a few comments about submitting contributions to *Break-In*. Please submit articles etc as Word. doc, rtf or txt files; not Pagemaker or pdf files. I cannot read *.pml files whilst extracting and reprocessing the text from pdf files causes me a lot of unnecessary extra work. With regard to pictures and diagrams please do supply them as separate, individual, *.jpg or similar files and do supply explanatory captions.

73, *John Walker ZL3IB Editor*

Next deadline for copy is
10 September 2013

## Contributions to Break-In

*Break-In* is a forum for NZART member's amateur radio projects, experiences, opinions and news. Your contributions and feedback is welcomed. Contact the Editor John Walker ZL3IB at <john.zl3ib@ihug.co.nz>

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# From The President

Vaughan Henderson ZL1TGC
<zl1tgc@nzart.org.nz>

Firstly I'd like to say a big thank-you to Wairarapa Branch 46 and the great job done by their Conference Committee team led by David ZL2BA. We all enjoyed the conference over Queens Birthday weekend with good food, good weather and good company. The Copthorne Solway Park was a very good venue with plenty of opportunity for socialising, or just meeting and greeting other amateurs. A full report on the conference proceedings, minutes of the Annual General Meeting and social activities are elsewhere in this issue of *Break-In*.

While on the subject of Conference, I don't yet have a confirmed venue for our 2014 Conference, but I have had some interest from two Branches in the South Island, so I hope to be able to let you know next time where we will be for Queens Birthday Weekend in 2014.

As many of you will have seen from HQ Infoline, and as announced at Conference, we have two vacancies on Council for the Central electoral district. I've had expressions of interest from four amateurs, but if there's anyone else who would like to put their hand up, please don't hesitate to let me know: <zl1tgc@nzart.org.nz> will get me via email.

At the Council meeting on Monday 3 June, discussion took place on how best to hold the monthly Council meeting. Traditionally this has been on air, on 80 m. However the high noise levels experienced by many Councillors while trying to take part in the on air net, has made it difficult for everyone to hear. As a result, a trial using Skype was successfully conducted mid-June, and Skype was used for the July Council meeting. I am aware that many of you like to listen to the Council net and using Skype prevents that however the success of the July Council meeting and the ability to have a good discussion on Council business with all Councillors present being able to clearly hear and take part means we will be continuing to make use of Skype. The Council meeting minutes will continue to be published on our web site and through this column in *Break-In* and Headquarters *InfoLine* I will do my best to keep you all informed of our on-going work and activities.

Also at Monday's Council meeting, we took the opportunity to discuss with the two WIA representatives, possible changes to the 40 m band plan arising from changes made in Region 1. The WIA have formed a sub-committee to work on this but, as of our Monday meeting in Masterton, nothing had yet been agreed to. It seems to me that if the WIA are going to make changes to their 40 m band plan, we should look to follow and probably adopt those where appropriate. More to come on this subject.

We also took time to discuss with Peter Freeman, VK3PF, the progress WIA were making on moving towards having an electronic copy of their magazine, *Amateur Radio*. Like us, they are moving somewhat cautiously in this direction as having a significant number of members take up an electronic-only subscription does have an impact on the cost of producing the printed copy. More to come on this as we work through the issues and costs involved.

My thanks to those amateurs who have come forward and offered to help with an update and revision of our web site. I'm working on a specification to define what we want, including a members only section, and will report back to you once that's in place.

Pleasing to see the New Zealand DX Hall of Fame has again recognised keen amateurs who have put in the time and effort resulting in significant DX scores. Originated in 2009 by Lee Jennings, ZL2AL, this year Graham Hunter ZL3GQ and his small team of judges have identified three more ZL hams worthy of induction into the DX Hall of Fame. Mike Edwards ZL1HY with a DXCC total of 346 plus over 300 entities on 80 m and 40 m phone and over 100 on 160 m has demonstrated his prowess at both DXing and contest operation since he was first licensed in 1973. For the first time, the NZ DX Hall of Fame has recognised the significant activities of one of New Zealand's foremost VHF operators, Bob McQuarrie ZL3TY who is the first ZL amateur to gain DXCC on VHF mixed (6 m and 2 m) and more recently using a combination of digital technology, CW and moon bounce now has DXCC on 2 m with 102 countries confirmed. The third inductee into the Hall of Fame for 2012 was Ted Thorpe ZL2AWJ, now a silent key, in recognition of his very significant DX activities from when he was first licensed in 1949. Full details of the citations can be found on our web site at <www.nzart.org.nz>.

Jamboree on the Air (JOTA) is coming up again over the weekend of October 19-20. 2013 is the 56th JOTA and the theme for this year is "Lets Share". It's not too soon to get in touch with you local Scout or Guide organisation and see what you can do to help them. JOTA is an excellent opportunity to introduce amateur radio to younger people and I hope you will take advantage of this. Marie Smolnicki, ZL2THE, is the National Organiser for Scouting New Zealand and you can contact her at <mah_re@xtra.co.nz>. The world scouting organisation web site at <http://www.scout.org/en/information_events/events/jota/the_56th_jota_2013> has some further information and ideas to help you make the JOTA weekend an interesting experience for young people in the Scout and Guide movements.

*Vaughan Henderson*
*President, NZART (Inc.)*

# Awards

Awards Manager: Alan Chapman ZL3GX
<awards@nzart.org.nz>



At the time of writing this column (July) Christchurch Branch 05 has just held its last meeting in its Galbraith Ave clubrooms. The clubrooms are in the in the red zone and have to be vacated by the end of July and will be demolished in time. Meetings will still be held on the first Wednesday of the month at various locations around the city.

### Taranaki Award

By the time you receive this *Break-In* the new Taranaki Award will be about to start. Brief details below and the full details are in the Awards Column of the June/July *Break-In*.

- The award runs from 10th August till 15th August.
- Award frequencies are from 8pm 3.677 and from 9pm 3.660 ± MHz

For those who only have VHF our members will be available to give out points on local repeaters 720, 705, and National system.

Remember your application for the award must be in by 31st August 2013.

The Dan Wilkinson Memorial Contest runs in conjunction with the Taranaki Award.

### International Lighthouse Lightship Weekend

This year's event – 17-18 August 2013 – Duration 48 hours from 0001 UTC 17.8.2013

For more information go to <http://illw.net/>

### Club Awards

Clubs running short-term awards or new awards should send details of the award to me via email or at my *Call Book* address or the address below. Remember that *Break-In* is only published on even months and copy, including, if possible, a copy of the certificate, for inclusion, should reach me by the end of the even month.

The Awards Net runs on 80 m, 3.677 MHz every night from 0800 UTC every night of the year. Every one is welcome to join in especially if you are mobile and in a rare county or district.

NZART Awards Manager, PO Box 1733, Christchurch 8140, <awards@nzart.org.nz >, <www.nzart.org.nz/activities/awards/>

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# Near Field Interference from Transmitting Antennas

*by David Conn VE3KL May/June 2012 Article*

*(Note: This article uses TCA HotLinks to provide access to enriched media from the RAC website. For more information, please go to May/June 2012 www.rac.ca/tca.)*

***Introduction***

*World wide communication systems have seen a rapid growth since the development of low cost communication devices such as cell-phones, personal computers and related devices. Because of this growth, the number of radio transmitters and noise sources has increased dramatically both in urban and rural areas. As urban dwellers now live in much denser environments, the problem of interference between radio transmitters/receivers and electronic equipment is increasing at a steady rate. Amateurs experience this on a daily basis as our receiver S meters in the HF and even VHF bands show stronger and stronger background levels as high as S9 in some cases.*

The rural community is not immune from this either. Many people that live in rural environments still receive television off-air with relatively weak signals which can easily be interfered with by moderately strong radio stations or noisy farm equipment.

Industry Canada has addressed this interference problem through a document called EMCAB-2 (see TCA, Hotlink,1). It basically identifies the cause of an interference problem. If the electric field strength is greater than 3.16 V/m (measured) on the premises where there is an interference problem with Radio-Sensitive equipment, then the problem is judged to be with the transmitter. If the field strength is less than 3.16 V/m, the affected equipment's lack of immunity will be judged the cause. This value does not depend on frequency and covers the amateur radio bands from160 m to 70 cm.

EMCAB-2 and other Industry documents were discussed by Norm Rashleigh, VE3LC, in the March/April and November/December 2011 issues of TCA. He also calculated the expected field strength from two popular antennas to demonstrate the magnitude of the problem. In these cases, he used the formula for the far field of a radiating antenna and kept the distance between the transmitter and area of interference to at least two wavelengths where the calculation is reasonably accurate.

This article expands on the work of Norm to include the calculation of electric field very close to transmitting antennas (closer than two wavelengths) as well as for long distances. The article sets up a framework where a specific situation can be readily analysed by amateurs who are designing a new antenna system or are presently involved in an interference problem. Several common situations are presented in the article which can be used as good starting points for an investigation.

**Background**

The space surrounding an antenna consists of fields that are extremely complex (see TCA Hotlink, 2). These fields consist of:

- Fields that do the work for us with well defined and fixed antenna patterns that do not depend on the distance from the antenna. These are called far field radiation patterns. It is the far field that we normally discuss in antenna articles and calculate with antenna simulators such as EZNEC and 4nec2. The power density of these fields decay as $1/r^2$ where $r$ is the distance from the antenna and the radiated power does not depend on $r$.
- Fields near the antenna that also radiate but where the radiation pattern depends on the distance from the antenna. These are sometimes called near field radiation patterns.
- Fields very close to the antenna. They do not radiate power. They are analogous to fields near a conducting wire or inside a capacitor at low frequency. They do not consume power unless they are coupled to some lossy circuit.

The term near field can be quite confusing and we must use it with care in the context of using simulators. For example, the EZNEC manual states that:

"Near field analysis, as it applies to EZNEC is something of a misnomer, because the complete field is actually calculated and reported. So near field results apply equally well in the far field."

Hence, to calculate the complete field at any distance from the antenna with the aid of EZNEC, one must press the "Near Field" button to invoke the calculation.

For this study, we want to know the complete field so the "Near Field" calculation will be performed with EZNEC software.

The situation that we are analysing is shown in Figure 1. Here it assumed that we have a transmitting antenna mounted above ground and located at some distance from a house or other building that contains radio sensitive electronic equipment. The antenna height is denoted $H_{antenna}$ while the height of the apparatus is $H_{apparatus}$. The term "apparatus" as used here refers to any field sensitive piece of electronic equipment under discussion.

The analysis does not include the geometry or structure of the building. We assume that the building is "invisible" to RF fields. In some real life cases, the fields inside the building will be smaller than predicted but in other cases, the house wiring can act as a receiving antenna which can produce large conduction currents and fields inside the building. Hence, the analysis acts only as a guide line for getting an idea of the magnitude of the electric field. The final analysis must be determined by actual measurement of the electric field.

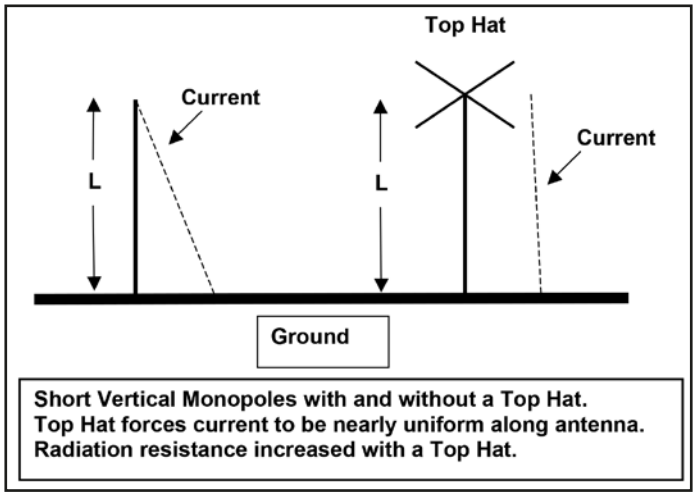


*Figure 1. Antenna system block diagram.*

The following sections present several case studies covering different bands of operation and antenna types. The results of some of these case studies are quite surprising. These case studies include dipoles, a ground mounted vertical and a three element Yagi. All case studies are for a 100 Watt transmitter with each antenna adjusted for resonance at the indicated frequency. For the dipoles and the Yagi, the complete electric fields are calculated broadside to the antenna in the region of maximum radiation.

**Case Studies**

**Horizontal Dipoles: 1.8, 3.5 and 7 MHz mounted in free space**

These lower frequency examples show basic trends that continue with other antennas at the higher frequencies. The results of the analysis are shown in Figure 2 for 1.8, 3.5 and 7 MHz. The first thing to notice is that the complete electric field near the antennas increases with increasing frequency. The electric field for the 1.8 MHz dipole equals 3 V/m at a distance of approximately 3 metres from the antenna while the same field strength for the 7 MHz antenna occurs at approximately 20 metres. The field strengths for the 3.5 MHz antenna lie between those cases. The field near the 1.8

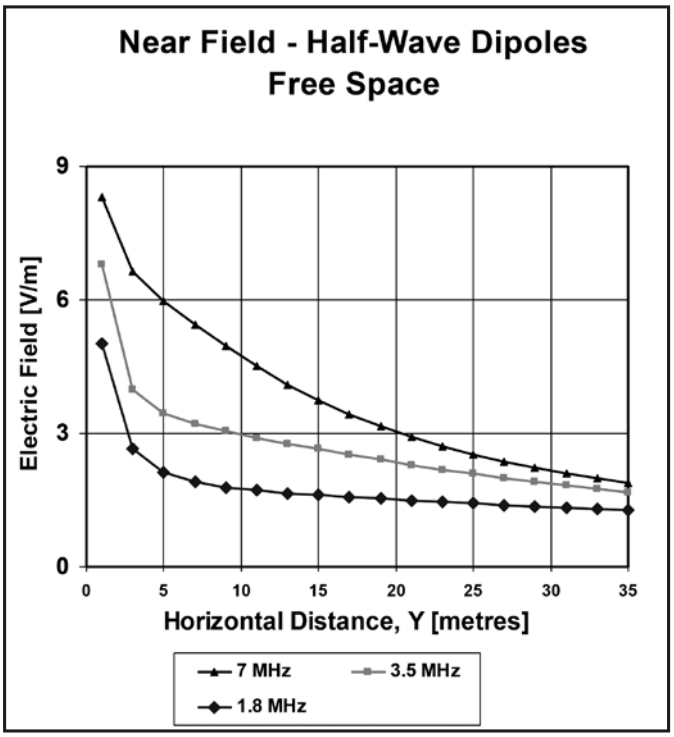


*Figure 2. 1.8, 3.5 and 7 MHz half wave dipoles in free space.*

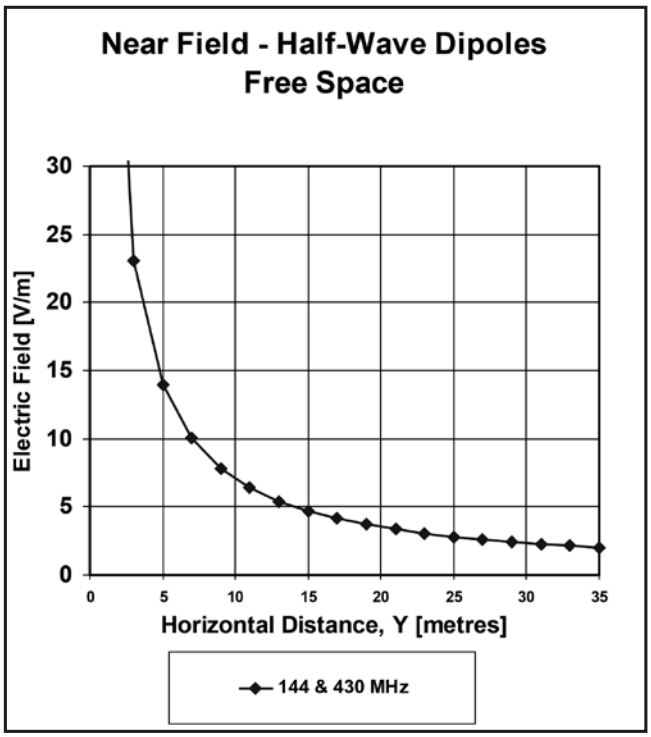


*Figure 4. 144 and 430 MHz half wave dipoles in free space.*

MHz antenna is low because of its very large dimensions, effectively spreading the energy over a very large space.

None of these antennas exhibit far field operation up to a distance of 35 metres. The far field region would have equal field strengths since the radiated power equals 100 Watts in all cases.

### Horizontal dipoles: 14, 28 and 50 MHz mounted in free space

The study was extended to 14, 28 and 50 MHz resonant dipoles that radiate 100 W as before. The results are shown in Figure 3. The complete field strength at 35 metres from the antennas is approximately 2 V/m for all antennas in this group indicating far field operation. As before, the field strength is greatest for the high frequency cases (close to the antenna). For the 50 MHz antenna, the complete field is approximately 18 V/m at a distance of 3 metres compared to a field strength of only 3 V/m for the 1.8 MHz antenna at the same distance.

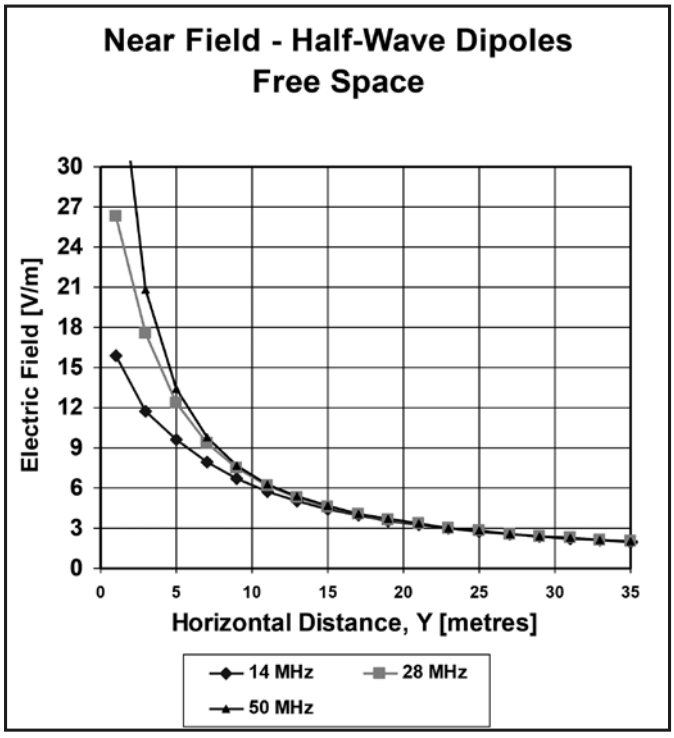


*Figure 3. 14, 28 and 50 MHz half wave dipoles in free space*

All antennas in this group produce a field strength of 3 V/m at a distance of approximately 23 metres.

### Horizontal dipoles: 144, 220 and 430 MHz

A similar study was conducted at 144, 220 and 430 MHz. The results are shown in Figure 4 for the cases of 144 and 430 MHz. The fields for the 220 MHz case are very close to the 144 and 430 MHz cases.

The study shows that:

- The field close to the antenna is highest for the 430 MHz dipole due to its very small size with its current distribution covering a very small physical region. The difference between these antennas is not evident on the scale of the graph shown in Figure 4 which was chosen to demonstrate the field problems out to 35 metres.
- The electric field for all antennas in this range approaches 3 V/m at a distance of 23 metres.
- For distances below 5 metres, the electric field becomes quite large: the largest in the dipole group that was studied.

### Horizontal dipole: 50 MHz mounted over a real average ground

The impact of mounting an antenna over a real ground was also studied. See Figure 1 for the geometry. Here, the antenna is mounted at a height of $H_{antenna}$ and the electronic apparatus is mounted at a height of $H_{apparatus}$ and located Y metres from the transmitting antenna.

The results are shown in Figure 5, where the complete field is plotted against distance from the broadside as before for three different apparatus heights (2, 6 and 10 metres). The antenna height was fixed at 10 metres.

Note that the reflections from ground cause a ripple in the electric field as expected. However, the ripple is not extremely large in most cases allowing us to perform most antenna analysis in free space as a first point of an investigation. The ripple extends the region where the field is close to 3 V/m.

Also note the extremely high values of the electric field close to the antenna for the case where $H_{antenna} = H_{apparatus}$. This is expected because the apparatus is very close to the antenna. In the other cases, the antenna and apparatus are well removed from each other.

### Two typical antennas: 50 MHz 3 element Yagi and a 14 MHz GP vertical

To complete this brief study, I also reviewed the performance of two typical antennas: a three element 50 MHz Yagi and a 14 MHz ground mounted quarter wave vertical antenna. The results are given in Figure 6. As seen in the graph, the

continued on page 6

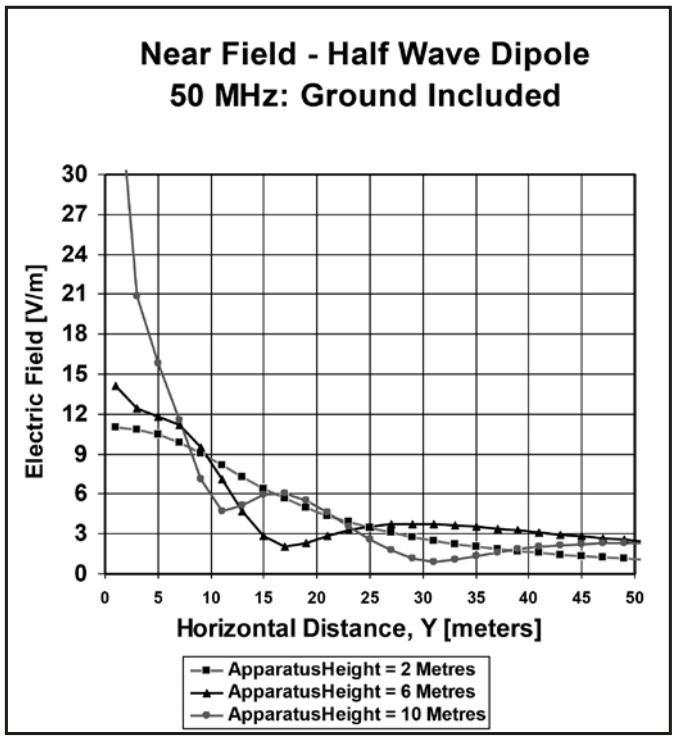


*Figure 5. 50 MHz half wave dipole mounted over ground.*

◂ *continued from page 5*

vertical antenna performs about the same as a horizontal dipole with the complete field falling off gradually with distance. The electric field is approximately 3 V/m at a distance of 20 metres from the antenna

There are two curves shown for the Yagi antenna that is mounted over an average ground. One curve shows the electric field for the antenna and apparatus mounted 3 metres above an average ground while the other shows the electric field for the antenna and apparatus mounted 10 metres above an average ground. Note that for the Yagi that is mounted well above ground, 10 metres, the field exhibits a considerable ripple and the electric field is still around 3 Volts/m at a distance of 100 metres from the antenna.

### Using EZNEC for near field calculations

If you are familiar with using EZNEC for ordinary far field and SWR calculations, it is quite easy to perform the near field calculations. Here are the steps that I use:

- Open up an antenna file of interest from your EZNEC folder. Check that the file is correct. Calculate the far field and SWR to see that everything is working as expected.
- Now, adjust the voltage or current sources to set the power to 100 Watts or another value of interest. This must be done manually. Click the SRC tab. This brings up a window where the power and other items are shown. If the power is too low, increase the voltage or current source until you arrive at a suitable value.
- Now, click the Setups tab on the main window. Select the "near field". A window appears showing the range (*x,y,z*) where you want to perform the calculation. For an antenna oriented along the *x* axis I usually set the *x* range to zero metres, the *z* range equal to the height of the antenna and then vary the *y* range from 1 metre to about 100 metres. Click OK. The window closes.

Now click the *NF* Tab. A window appears with the values displayed in a table. This can be saved in a regular .txt file for your records.

- For your convenience, I have included the antenna files used in this article on my web site (TCA Hotlink, 3). The range for the calculations is given in these files which you can easily change. Go to the web site and click the TCA tab/ TCAfiles.

### Conclusions

This article has presented case studies of the near field produced by transmitting antennas in the frequency range from 1.8 to 430 MHz. The analysis is based on using the near field algorithm in EZNEC for ideal conditions. It was stressed that results are only to be used as guide lines since the apparatus exposed to the electric fields is usually housed in a building which cannot be modelled in any general case. Hence, the final test must be based on measurements. The article did not discuss safety issues so no judgments can be made here. Some important observations can be made. They are:

- Generally, the electric fields near antennas increases with frequency. Hence, the fields are low for the 160 metre band and large for the 70 cm band under the assumption the transmitted power is the same for all antennas.
- Ground has an impact on the fields but is not a dominant affect, especially for apparatus that is mounted close to ground.
- The analysis performed with EZNEC can only be used as a guide line because it is not practical to model buildings and their associated wiring.

### Further study using TCA Hotlinks

Further information is provided with TCA Hotlinks which are easily accessed via the RAC website. For this information, please visit <http://www.rac.ca/tca>. Hotlinks make it unnecessary to type URL addresses into your computer and provide you with calculators and other support that demonstrates the ideas presented in the articles. The following hotlinks for this article are available on the RAC site.

***TCA Hotlink, 1*** EMCAB-2 Interference Criteria <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01005.html>

***TCA Hotlink, 2*** Antenna Field Regions <http://www.antenna-theory.com/basics/fieldRegions.php>

***TCA Hotlink, 3*** EZNEC Antenna Files under TCA Tab/Files <http://ve3kl.com/>

### Acknowledgements

The author wishes the thank Norm Rashleigh, VE3LC for his discussions and insight about near fields and interference issues.

Until later, VY 73,

*David, VE3KL*

# New Members

| *Name* | *City/Town* | | *Branch* | *Call-sign* |
|---|---|---|---|---|
| AM Larsen | Auckland | T | 3 | ZL1AML |
| A Watson | Tokoroa | T | 17 | ZL1CO |
| G McMullin | Auckland | T | 29 | ZL1MCM |
| M Greco | Auckland | T | 29 | ZL4MEG |
| C Jang | Auckland | T | 29 | ZL1FTI |
| A Sarcevic | Auckland | T | 29 | ZL2GBV |
| M Pollard | Auckland | T | 29 | ZL4MWP |
| RGB Hilton | Whangarei | T | 28 | ZL1GUY |
| VA Hilton | Whangarei | F | 28 | ZL2VH |
| M Uroda | Whangarei | T | 28 | ZL1UM |
| A Lilley | Whakatane | S | 51 | ZL1HAZ |
| R I Lane | Sefton | T | 68 | ZL2RIL |
| G A Olivier | Auckland | T | 29 | ZL1ALX |
| W P Kenyon | Auckland | T | 2 | ZL3WPK |
| P McNab | Auckland | T | 2 | ZL1YN |
| M Huddlestone | Te Puke | T | 51 | ZL1SSL |
| M Williams | Whakatane | T | 51 | ZL1MPW |
| S L Winn | RD 5 Tauranga | T | 88 | ZL4SW |
| G Olivier Snr | Auckland | T | 2 | ZL1BAA |
| S Olivier | Auckland | F | 2 | ZL1RIA |
| S R McLuckie | Auckland | T | 2 | ZL1PWR |
| G C Miller | Woodend | T | 68 | ZL3LS |
| W M Dunman | Tokoroa | T | 17 | ZL1WRE |
| V B Jordan | RD 6 Christchurch | T | 5 | ZL3DNA |
| H C Deverell | Whangarei | T | 28 | ZL1BHS |

# EME on 1296 MHz

*by Hugh Smirk (ZL4HL)*

***Introduction***

*The microwave bands have long been of interest to the writer with construction and development being the main interest. As a retirement project it was decided to try for some EME contacts on the 1296 MHz (23 cm) band. This contribution is a collection of information and experiences acquired in achieving the above goal. It is hoped that others will benefit from the information and will take up the challenge and experience the thrill of achieving a moon bounce contact.*

There is little doubt that EME on 1296 MHz represents a significant technical challenge compared with EME on lower bands. However the development and availability of very low noise preamplifiers together with digital techniques such as WSJT, to extract signals from below the noise threshold, have made 1296 MHz moon bounce more achievable.

**Early Trials**

At an early stage in the project I set up a 3 metre dish with a circularly polarized feed horn together with a 15 year old Icom preamplifier at the dish. Note that circular polarization is standard on 1296 EME. The receiver was an FT 736 complete with 1296 module and a basic computer running WSJT software was used. Nothing much was heard while listening for EME signals at random until the day of an ARRL EME contest. Even with this basic initial setup 6 to 10 weak signals were heard some being well clear of the noise and potentially readable. The WSJT program was useful to detect the presence of signals but in those early stages only CW signals were identified. The point here is that some of the "Big Gun" EME stations can be heard on quite modest equipment when and if they are operational.

Since my early trials much effort has gone into improving the receiving setup and also increasing transmitter power to an output level adequate to moon bounce. The current station equipment for 1296 EME is as listed below. For the remainder of this article I will comment on a few particular aspects which were important to bring my station up to moon bounce standard.

For information on the now well-known and widely used WSJT software developed by Joe Taylor K1JT see <www.physics.princeton.edu/pulsar/k1jt>.

**Station Setup**

- 3 metre Andrews dish with *f/d* ratio about 0.3 and spun aluminium surfacing (See Figure 1)
- Square septum feed horn with separate receive and transmit ports (See Figure 2)
- Chaparral style choke ring on feed horn (See Figure 3)
- G4DDK preamplifier mounted at the feed horn
- RG 213 coax from preamplifier to receiver
- Kenwood TS 2000X transceiver with 1296 module
- Desktop computer with soundcard and WSJT software
- Four stage sequencer controlling receive / transmit changes
- Down East Microwave booster amplifier between transceiver and power amplifier
- Final valve amplifier using GS15b valve at 300 – 400 watts (See Figures 5 and 6)
- 2000 volt power supply for final amplifier
- LDF 4 coax from power amplifier to feed horn

For an overall view of the operating area see Figure 4.

**Dish and Feed Horn**

On 1296 MHz, EME contacts have been reported with dish sizes as small as 2.3 m but clearly larger dishes are preferred as they enhance both transmitted and received signals. The 3 m dish I use has an *f/d* ratio of about 0.3 and thus would be classified as a deep dish. Consequently it is hard to feed efficiently resulting in lower gain. The feed horn finally adopted was a stepped septum type square feed horn which if accurately dimensioned can generate near perfect RH and LH circular polarization, depending on which port is fed. A signal bounced off the moon is reversed in polarization thus one port is used for transmitting and the other for receiving. Septum type feed horns are a relatively recent development which has simplified generation of circularly polarized signals. The feed horn used follows the design described by Zdenek

*Figure 1. Three metre dish with septum feed horn and sun shadow on surface.*

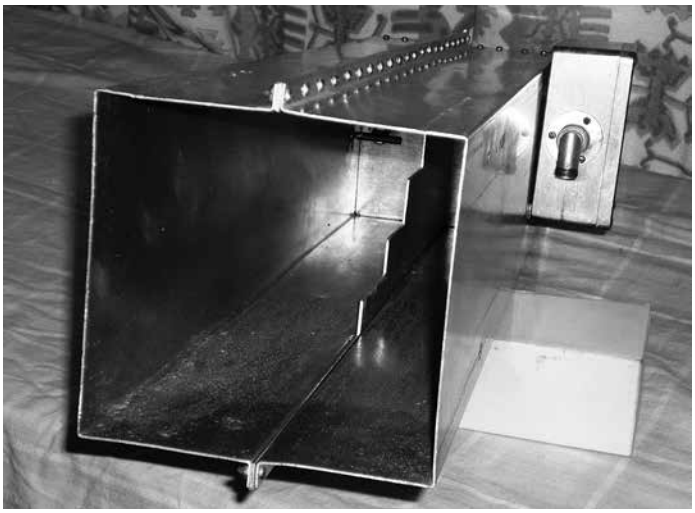

*Figure 2. Septum feed horn with transmitting monopole just visible and receiving preamp / relays in die cast box.*

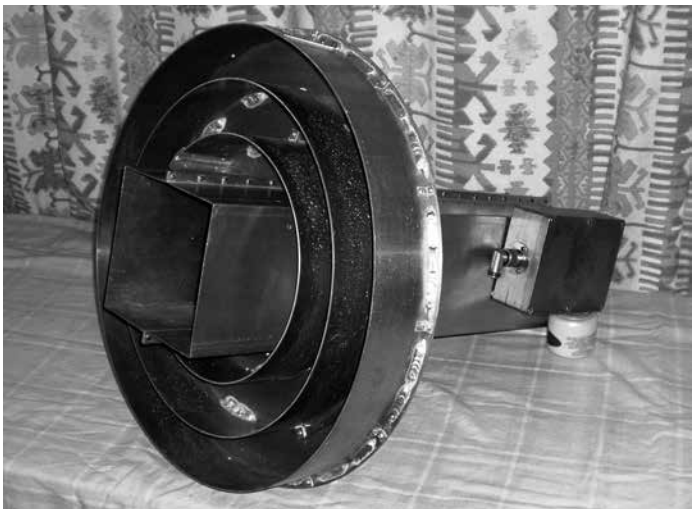

*Figure 3. Complete feed horn with chaparral choke to improve surface illumination of deep dish.*

continued on page 8

*Figure 4. Whole station setup left to right: computer running WSJT, sequencer and computer interface, TS 2000X transceiver with separate power supply, intermediate amplifier, power amplifier, Bird wattmeter.*

*Figure 5. Valve amplifier (400 watts) with pump and tank for water cooling. (Normally located below bench).*

◂ *continued from page 7*

Samek (OK1DFC) in a power point presentation *"Feed for Parabolic Dish with Circular Polarization"* as follows: <www.ok1dfc.com/eme/technic/septum/pppresnt.pdf>.

To improve the illumination of the dish surface and to negate problems inherent in a deep dish I built and fitted a Chaparral style choke ring. This increased the sun noise by some 2 dB giving an overall sun noise figure of about 11 dB. This figure is the sun noise measured by comparison with areas of cold sky at about 15-20° Kelvin thus indicating the extreme cold in space. (Degrees Kelvin are temperature measurements above absolute zero or -273° C). I found sun noise measurements to be a very convenient way of checking the overall receiving system performance. However sun noise depends on solar flare activity at the time so allowance is required for this if measurements are over a period of weeks or months. The solar flux index is available as follows and conveniently has been interpolated for a frequency of 1300 MHz: <www.ips.gov.au/>. This is the Australian Radio and Space Weather Service. From the opening page select *"Solar"*, then under Learmonth Observatory select *"Radio Flux"* then *"Quiet Solar (IFLUX)"*.

An alternative used by many stations is to switch a 50 ohm resistor directly into the preamplifier input. This provides a noise reference at ambient temperature and can be used to check the receiver performance. Measurements as above can become quite complex if numerical performance figures are to be obtained.

For amateur purposes a parabolic dish of *f/d* ratio 0.4 to 0.6 is commonly used and can give good results without the need for a choke ring system. For very detailed information and results of computer analysis of parabolic dishes and feed horn arrangements see Paul Wade's (W1GHZ) *"Microwave Antenna Handbook ONLINE"* <www.w1ghz.org/antbook/contents.htm>. For information on a Chaparral style choke ring see *"Septum Feed Revisited"* by Rastislov Galuscak (OM6AA). (To find this pdf file, google the above title)

The parabolic dish, power transformer and numerous components as required for the project were contributed by Bernie (ZL4IS).

*Figure 6. Rear view of amplifier with brass cavity and valve in centre. Plastic water hoses from anode to earthed disconnection point on rear. (Safety covers not shown).*

### Power Amplifier

In terms of reliability and cost I decided in favour of a valve power amplifier rather than a solid state unit. Recent developments and availability may now favour solid state units for 1296 EME as power levels to about 1 kW can be obtained. The cost advantage may still be in favour of valve amplifiers particularly if you are home brewing an amplifier.

Initially the amplifier I used had two 2C39 tubes which were water-cooled. It was difficult to find good spare tubes to operate well at 1296 and thermal instability problems were a recurring problem at power levels above 200 W. As a result a change was made to the Russian GS15b tube which is a popular tube for 1296 operation. A single GS15b when water-cooled can deliver up to 400 W. Like the 2C39's the GS15b's are not all able to give top power output at 1296 so some selection to get a good tube is required. Fortunately the GS15b can be acquired as NOS from about US $20 so it is not too costly to acquire several tubes and to select the best for use in an amplifier.

My GS15b amplifier was built around a successful cavity arrangement developed by KD5FZX. It has proved to be stable and reliable in performance. The cavity was machined by Peter (ZL4LV) and Dave (ZL4DK) who also contributed low-loss hard line coax. A photograph of the cavity unit was published in the 2012 May / June issue of "*Break-In*" under VHF Scene (page 20). The GS15b tube in my amplifier is water cooled and runs with up to 2000 V on the anode. For details of the GS15b cavity see: <www.nd2x.net/kd5fzx-gs15-1.html>.

### Receiver Preamplifier

This is one of the most important components and money spent on getting the lowest possible noise figure can compensate for use of a smaller parabolic dish. It is commonly stated by EME operators that every 0.1 dB gained anywhere in the system to downstream of the preamplifier is important. Currently 1296 MHz preamplifier units are available with noise figures down to below 0.2 dB. The units I use are from G4DDK (Sam Jewell) and are available built up or as kit sets. I have successfully assembled one of the kit set units which incorporate surface mounted components. It required a steady hand and quite a bit of time to complete. Over the years these

# Ham Radio – Internet Sites Worth a Visit

Compiled by Jim Reed ZL1LC
<bp_express@yahoo.com>

In future issues of *Break-In* we hope to bring a few internet sites that have a ham radio focus, to brighten up your week. Here's some to start you off.

If you have ever wanted to see what the Hamfest at Dayton, Ohio in the USA really looks like, you can hunt around on YouTube and see a number of short selections. The quality is quiet variable and often disappointing. The guys from Amateur Logic TV were there this year and their segment can be found at <http://www.amateurlogic.tv/wiki/doku.php?id=start>. You can also find it from their main site at <http://www.amateurlogic.tv/transmitter/video/amlogic55_hi.wmv> by selecting Episode 55. It is worth a look, especially when you think of the small junk sales that we have in NZ.

Need a small component for that special project? Check out the eBay shop <www.thaishopetc.com>. There's quite a number of good quality components available at very reasonable prices and in most cases the shipping is free. It's just a bit of a pity that the NZ dollar has dropped against the US$ recently.

I managed to get my old mate Trev back on 2 metres recently and one of the pages I visited looking for antenna designs was <http://ve3elb.ham-radio.ch/2m-70cm%20antennas.html>. Check it out. There are calculators for J Pole, (Slim Jims), Super J Poles and Cubic Quads. Just plug in the centre frequency that you want to work and stand back. You'll get enough dimensions to race out and build something that will get you on the air with style.

<http://www.eastalabamaarc.com/2m70cm_jpole_project.htm> has a site which has step by step instructions for building a 144/430MHz dual band antenna. The only thing you might have to hunt around for is the coax to 3/8-24 antenna base, but there are plenty of other antenna base solutions that can be found in the average Kiwi ham's junk box.

Have you ever sent a letter in NZ and had it bounce because there was no post code on it? Put <http://www.nzpost.co.nz/tools/address-postcode-finder> into your Favourites and start typing in the address. If you are lucky, you'll get a number of choices and it is very easy to spot the one you want. Haven't used Favourites? If so, let me know so that I can cover it next time.

<http://www.hamradiosecrets.com/> is a reasonable place to start if you are new to ham radio. There's all sorts of hints and tips there from selecting a transceiver to building antennas. Make sure you poke around all his little links. There's a few gems hidden there. And if you are really down in the dumps, have a look at his cartoon section.

Lots of hams, such as W9CF, have their own websites full of information. If you wander through them, you can often find something that rocks your boat. Have a look at <http://fermi.la.asu.edu/w9cf/index.html> He has published some applications. Check out the Yagi Antenna Modelling applet. Be aware that they require 64 bit Java and won't run under the Chrome browser. He's also got a number of articles in PDF format. These articles can be a bit intense, but there's usually enough basic data, without the maths, to get the message across. See his one on Putting a Balun and Tuner Together.

Contests can be fun and a good way to hone your operating skills. <http://www.hornucopia.com/contestcal/index.html> is a site that gives you a good list of what is coming up. Click on the contest to find out the essential details such as the exchange being used, time etc. If you are chasing countries this is a great time to catch stations on the air.

If you are a CW operator and want to know who in the big wide world is hearing you, log into the Reverse Beacon Network <http://www.reversebeacon.net/> Set a filter for the band that you are working and see who is catching your transmission.

I haven't seen a comprehensive reverse beacon system as WaveGuide. This is only available for Apple devices such as the iPad and iPhone. It collects data from a number of reverse beacons such as PSK Reporter, DX Watch, Reverse Beacon Network, and WSPRnet, WaveGuide plots real-time propagation conditions on a global map, connecting stations with great circles to show exactly where the band is working. You can set the mode of transmission and the band. It is available from the App Shop and does cost a little but for US$4.99, it is really worth it.

I'm looking for sites to present, so if you have a couple of good ham radio sites in your bookmarks, please email two only to me at <ZL1LC@ARRL.net>. Especially I'd like to hear from someone with an Android device who can flick me a couple of sites every so often.

73 *Jim ZL1LC*

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*Figure 7. Front view of water cooled amplifier.*

units have been steadily improved by G4DDK and others. Some of the very latest preamplifiers from G4DDK have been measured at 0.18 dB noise figure. They are mounted in a small tin box and utilise SMA connectors.

These preamplifier units have performed very well but I have had to replace some of the low noise transistors due to damage from RF leakage despite use of a good sequencer for receive/transmit changes.

For details of G4DDK preamplifier units see: <www.g4ddk.com> and go to VLNA PDF.

The sequencer I use was described by Chip Angle (N6CA) and published in the *ARRL Handbook 2001* under the heading "TR Time Delay Generator" (chapter 22 page 51).

### Working 1296 EME

After several years of decline, operations on 1296 EME appear to be increasing. The best opportunity to make a contact would seem to be on a contest day when numerous stations come on air. The majority of stations are on CW clustered around 1296.020 MHz. If you are like me and struggle with high speed CW under weak signal conditions it may be difficult to work some of these stations. On this band morse at 12 to 18 wpm is strongly favoured as slower morse can be broken up by liberation effect experience on this band. At slower CW speeds a dah can be broken into two dits by rapid fading caused by the liberation thus making communications more difficult. Over several years I have only heard 3 or 4 SSB stations and perhaps 5 or 6 WSJT transmissions on the 1296 EME band. Most WSJT transmissions seem to be about 1296.080 MHz.

During the November 2012 ARRL EME contest I copies several WSJT stations and easily exchanged information with W6YX the amateur radio station at Stanford University. My signals were -16 dB despite the received transmission being easily audible above the background noise. A few weeks later and totally at random I heard and worked JA6AHB again with his signals well above the noise and my report was -15 dB. It was certainly very satisfying to make these initial contacts after a long development period.

From these contacts I have concluded that I am receiving stronger signals than the stations I am working. This seems to indicate that the main power lobe from my parabolic dish may be impaired by use of the choke ring in my relative deep dish. Computer analysis of choke rings by others has indicated some distortion of the main power lobe for dishes of *f/d* ratio about 0.3 and so this is an area for me to further investigate and make improvements. Currently I am rebuilding an old damaged dish which has a longer focal length than the present dish. I expect this will result in better illumination of the dish surface and an improved main power lobe. Any EME project must be considered a work in progress particularly on the higher amateur bands.

New Zealand is under represented on 1296 EME so take up the challenge and try for your own moon bounce contact. It is an exciting part of our fascinating hobby. βi

# Noisy new light fittings!

*by Ken Osborne ZL3OZ*

*I have been experimenting to try to eliminate the noise from light fittings here for a few days when I get time. First of all I had some new fluorescent fittings fitted in my work room where I make a living; the room next door to my radio shack. They were touted as "non-strobing". Well it turns out that non -strobing is the future due to an "electronic ballast". This means a switchmode power supply running at a hundred and something kHz instead of a std old fashioned inductive ballast at 50 Hz. If you thought old fashioned fluoro fittings were a noise source then wait for this. They wiped out most the HF bands on my radios. About 3 or 4 S points, sharp hiss at least, depending on frequency. And that was from my basement workshop to the aerials about 10 m above my roof. The wholesalers had to order in standard ballast fittings to replace them and said "shortly the standard ballast will no longer be available, they will all be electronic". Bah!*

So I explored a few of the new LED fittings borrowed from a friendly electrical wholesaler. One, about 40 W was about a foot in dia and was like turning on the sun!!! I was most eager to have this above my main workstation. It created about 3 S points of noise and 6 clip on ferrites on its supply cord only dropped it back about 1 S point. Same if I put a single clip on in each leg with about 7 turns through each of them.

Next a 12 W LED fitting and it was just as bad. To this one I fitted a commercial filtered socket as salvaged from some piece of gear, you know the jug cord type. It was an LC type in a shielded metal cover. It cut about 2 S points of the noise from the original 3 until I earthed it to the shack earth when the noise disappeared almost completely. Of course its hard to find a good RF earth in the Pinex® ceiling so the light fitting would have to have a metal box around most of it so the noise could be coaxially killed at the filter, thus staying in the metal box. Bah!

This may be a cure for the fluoro fittings mentioned above but that was not tried. Of course the electrician couldn't understand why the earth in the mains wiring wouldn't be as good when I tried to explain it would have almost no beneficial effect.

I found that if a random length of wire (my headphones with a short extension which was handy) was used as an earth on the same filter (free floating in the room) it worked fine as a counterpoise earth, almost as good as the real earth, but then on another band it increased the noise; a wavelength issue.

Of course this noise is because all these LED lights have a 230 V rating so have switch mode power supplies fitted in them to produce the low DC voltage for the LEDs and if that low voltage is supplied by a standard linear power supply with a transformer, then there is no noise. The miniature sun version I tried would be great in my workshop but at $160, and then to have to build and house a power supply to run it makes it a no brainer. As an aside I tried some dinky wee low voltage halogen down lights in a pretty metal fitting with a switcher built –in. My wife liked the look of them for the sun room. That lot wiped out the 40 m band at about 10 dB over 9, massive noise, but less noise higher in frequency.

So beware the cheap switchers in the lights of the future. Stock up on basic filament lamps while you can get them.

Perhaps we can make the greenies aware of the "unseen pollution" that only we seem to be aware of.

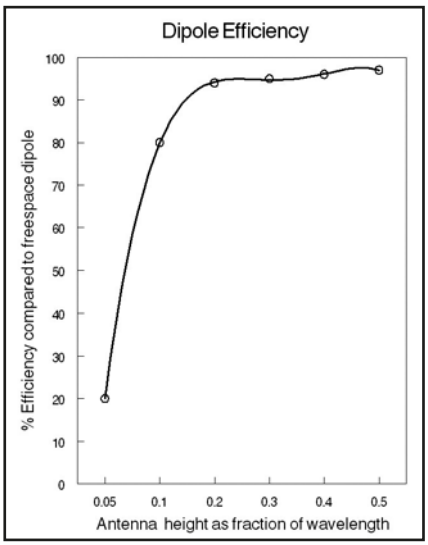
*Ken ZL3OZ*

# Experimenter notes

*by Bob Vernall ZL2CA*

*Ground and environment RF loss is higher than most amateurs are aware of. Textbooks invariably deal with reference situations of free space or perfectly conducting surfaces, but neither reference scenario applies to typical amateur antennas. Computer modelling software is a very good tool for antenna optimisation, where, typically, one night's output can be equivalent to three months of cut and try with an actual antenna. The modelling approach means it is as simple to add wire back on as it is to cut it off when tuning leg lengths; or adjust spacing or height; just amend numbers in a three- dimensional wire table. However, as useful as modelling software is, the popular NEC2 code can tell fibs about what antenna wires do near real ground. For antennas at typical heights, practical test results for loss have better credibility than modelling (note that rarer NEC4 software is designed to deal with real ground but the software costs a lot more and it needs prior issue of a personal licence; at one time issued by The Pentagon).*

Environmental RF loss from soil, houses and trees is a topic that is shy on information. An article with practical information on dipole loss above ground is included in ARRL Antenna Compendium Volume 1, a 1985 publication. Refer to the scanned image of a graph of dipole efficiency versus height above poor quality soil, with height normalised to wavelengths. Note the very steep fall in efficiency for height below about 0.1 wavelength. The graph shows efficiency falling to 20% for a height of some 0.04 wavelengths. In other words, an 80 metre dipole at 3.2 metres above ground likely means that only 20 Watts of a 100 Watt output rig leaves the section and contributes to a QSO. I can report that a ZL3 with outer ends of an 80 metre inverted-Vee tied off to fence posts about 1.5 metres above ground improved skywave signal strength by about two S points when the outer ends were lifted by wooden poles to about 4 metres above ground.




*Graph of antenna efficiency vs antenna height.*

Trees and shrubs have conductive sap and are "lossy clutter" from an RF point of view. This definitely affects LF and MF amateur transmission, where all of a base loaded antenna is at high voltage, so trees can attract electric flux from anywhere on the antenna. Loss is moderately higher with a wet environment following rain. For a resonant dipole the higher electric field is around the outer region of each leg, so a tree near an end readily "soaks up" electric field.

The moral of the story is for your wire antennas to be as high as you can safely arrange, and minimise outer ends being in or near foliage. It makes little sense for only a fraction of your RF power output to leave the section for a QSO.

# Fun with a Baofeng UR-5R handy-talkie

*by Jim Reed ZL1LC*

*I didn't intend getting a new 2 metre hand-held (HT handie talkie); it just happened. I had bought an Icom CI-V to USB adapter on eBay and was looking for suitable Prolific drivers for Windows 7 that didn't crash. In my wanderings around the internet, I came across a number of sites for the Baofeng (pronounced 'Bow Fang', I believe) UR-5R, because they use the same drivers with their programming cable.*

The internet is a wonderful place, if you are careful. It makes the world one, when purchasing and does level up the playing field for pricing. I cringe when I see some of the pricing on TradeMe®, especially for products offered from vendors from across the ditch. In a recent exercise, a similar product, by purchasing direct from the USA, I saved 40% over the total costs of importing via Australia. There are a few NZ vendors, and Icom is one, who are very competitive. I bought a large transceiver a couple of years ago and the Icom NZ price was very competitive with the best price I could get, including shipping and GST, and I still had a full Icom warranty. With an overseas purchase, that doesn't normally happen.

Back to the UR-5R, there's a Yahoo interest group, the site <http://miklor-uv5r.99k.org/> has heaps of information and the eHam.net reviews rate it a so-so 3.9 out of 5. The main complaint being difficulties with programming the unit. The more I read, the more interesting it looked, and then I discovered it on eBay.

I don't know how they do it, but Baofeng, and a number of other manufacturers, churn out these HTs as dual-band FM transceivers for less than US$60. They cover ranges somewhere from 136-174 MHz and 420-480 MHz. There's a whole suite of accessories such as antennas, speaker/mics, batteries, chargers etc; and it's all at a pretty low cost. My little setup of transceiver, spare high capacity battery, speaker/mic, better antenna, USB programming cable, battery replacement module for car use (not a charger) and BNC to SMA adapter came to a total of NZ$125. Everything was purchased with Free Shipping, and such low prices don't attract any Customs charges this end.

The first things that you need to do is set up an eBay account to purchase the goodies and a PayPal account to pay for them.

Nine days after ordering, the transceiver arrived and then the rest started to dribble in. Some were delayed because of New Year celebrations in China. When you order from eBay, you can fill your cart with items from different vendors and pay once. eBay then sends the orders out to the different vendors and they individually send you notices that the goods have been shipped.

So what do you get? There's an old adage that you get what you pay for. The transceiver came with the standard 1800 mAh Li-ion battery and the extra 3800 mAh one, a charger with the correct NZ plug (amazing), a duckie antenna, strap and mobile phone-like headset/mic. Then there was the manual. They may as well have left that out! The batteries had some charge so I shoved one in and put the other on charge. Lithium ion batteries have great capacity in small sizes and weights. As you turn on the HT, you are introduced to "China Girl" who makes an announcement for most of the things you do, especially with programming. Apparently her accent has improved with the later versions. Of course there's a "Welcome" display (literally).

Using the manual, I managed to turn it on, (there's a Volume On/Off knob) and program the VFO for a couple of repeaters. It has "dual watch" which is basically two receive channels but no indication as to which is active. There's also the front panel selection of two displayed channels toggled by the A/B switch. You can enter the channel via the keypad or use the Up and Down arrows. I found I could set one display for a -600 split and the other for a +600 split. With the channel spacing set to 25 kHz, I had a working HT on VHF.

There's no way that you can set the memories up using the information in the manual. You need the information from the internet and then it's not too bad, once you understand that you must enter the RX and then the TX frequencies. Using the programming cable and a PC, you can assign the memory channels alpha numerics.

With the standard battery, the set disappears in my hand, and I haven't got big hands, but with the larger battery, it's a perfect match. My trigger finger falls on the PTT switch (I'm a right hander,) and it just feels right.

With 5 W or 2 W measured, it's got plenty of punch. There's talk time out timer, which I pushed out from the default 60 seconds to 180; that is designed to prevent overheating. Apparently the display goes blank when it gets too hot. Speaking of displays, the alphanumeric display can be backlit by three different user selectable colours.

The receiver is sensitive enough and doesn't appear to overload. The receive audio is nice and loud but you need to hold the set about an inch away from your mouth for transmission. Tweaks for this are either to use an external mic or widen the mic hole. The external mic is of the Kenwood two pin variety and has less chance of killing the internal mic.

The antenna uses a female SMA connector, so you need to get an adapter if you want to use an antenna from your normal HT. Gender adapters and BNC or SO239 converters are cheap on eBay, I found the supplied antenna was pretty good and only when I used a telescopic antenna, about half a metre long, did I notice the difference with any other HT antenna.

The belt clip is secured to the body of the unit, not the battery and is quite rigid, but still only plastic. The low battery warning tells you (via voice message) that the battery is on its last legs and then you have got to move because it's only got enough left for 30 seconds of transmission.

Programming. If you are running Windows 7 or 8, you are in for a challenge to get the right drivers loaded. Join the Yahoo group and

read up on this. Windows XP is easy apparently. Once you finally get the programming going there's not a lot more that you can do over the manual process other than assigning alphanumeric identifiers to the channels and cloning sets from a saved configuration. With 128 memories, there's room for all the VHF and UHF channels plus more for monitoring the Marine or CB frequencies.

Some of the party tricks. There's a LED on top that acts as a torch when the MON button is tapped. Tapping the Call button, turns on the FM broadcast receiver. You can tune it with the Up/Down buttons and listen to your favourite FM station. When the amateur channel you have selected receives a signal, that signal takes over and stays there until you tap the Call button again. With the vast range of frequencies available, you can program this HT to work on the Amateur VHF and UHF bands, the Marine VHF band, and the NZ UHF CB band. Whether it is type approved for the latter two bands is unknown. There's also a siren for the unwitting.

Some downsides.

- The S meter works in a binary mode. It's either displaying with a signal input, or off with no signal. There are no intermediate states.
- Your Icom etc SMA antennas won't fit without a gender changer as most of the Chinese HTs require an antenna with a SMA Female

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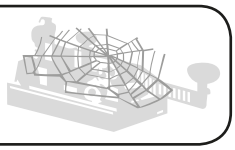
# Silent Keys

*The Association deeply regrets to record the death of the following members and extends its sympathy to the bereaved.*



**Silent Keys: guidelines to contributors**

*Contributors are requested to limit their obituaries to between 200-400 words. Content should focus mainly on the amateur radio activities of the deceased. Normally photographs cannot be included.*

### Jack Culloty ZL1AJ

Jack signed out on 11 March 2013. He was in his 92nd year. Jack was a very active man throughout his life, and even just prior to when he passed away, he received the winner's certificate for the Straight Key Contest held in 2012. He was a great CW operator; a skill he learned prior to WW2 (as a cadet at the NZ Post Office in 1936) and used as a Signaller in Territorial Army, 7th Medium Battery and then as a Wireless Operator (1941) whilst in the RNZAF during the war.

At a local level in recent years, he participated in the Jock White contests. A very competitive operator who was able to pass on his thoughts and knowledge to other operators in the club. Tom ZL2TDM (his grandson) picked up a lot of skills and successfully teamed up with Jack in a few contests.

Prior to his retirement from the NZED, he was very active in the Hamilton Radio Club during the 60's and early 70's when his call-sign was ZL1AZZ, then later in the 80's, the Dunedin Radio Club as ZL4GH and then latterly, as ZL1AJ the Te Awamutu Amateur Radio Club. During all this time, he was responsible for many new 'Hams' getting their NZART 'tickets'.

In the last couple of years he was more into organising. Jock White contests were held at his place with accommodation and catering supplied, along with caravans, poles, batteries and aerials. I was able to do a single ops and a CW only section that way and was encouraged at all stages to do well. On those occasions I felt that I was in "Hotel Culloty" as I was spoiled with being able to sleep in a bed, had breakfast made for me and more important for me: the encouragement from Jack to do well. Supporting and mentoring was his love.

Jack was also active in other areas like trout fishing on Lake Arapuni, old tractors, stationary engines and duck shooting. He was also still a dairy farmer, having a vast knowledge about the land on which he was born, had developed and worked on from childhood.

The Te Awamutu Amateur Radio Club proudly presented Jack with a Lifetime Membership Award last year and we will miss Jack, as an operator, friend and mentor, as will the Pukeatua and Arohena communities. I will certainly miss him.

He is survived by daughters Lorraine and Dorothy (ZL1DLC), and their families.

*Bernard ZL1WT for Branch 40, Te Awamutu Amateur Radio Club.*

### John Richard Nixon ZL1FR

John was a Member of Auckland Branch in 2009 when he discovered that HF reception was impossible at his Grand Chancellor apartment; being too close to the Sky tower. His solution was to set up a remotely controlled station at Dairy Flat, north of Auckland. At the same time our Branch was embarking on a similar project at our clubroom. Thus our paths met in collaboration and fellowship.

Readers of the November / December 2012 issue of *Break-In* might remember John's advertisement to sell this property with its fold-over, crank-up tower, preferably to an Amateur. After his death (a cancerous brain tumour), the property was sold on the condition that the tower should be removed. Auckland Branch is grateful to Waka Aroha Trust who recognised that this tower would benefit many Amateurs if it went to a radio club.

John Nixon had a long career in aviation electronics, industrial electronics, prototype design and build, general purpose computer systems hardware and software, commercial banking application design and implementation, image capture and processing, data compression and transmission protocols. He was a Director of Pactec NZ Ltd.

His recent specialties were to advise, design, and project manage Fibre to the Home (FTTH) systems, particularly with wide-band RF overlay for satellite TV transmissions. For the last nine years he has been the CEO of Optical Network Engineering (ONE Fibre) that provides consulting engineering service to the fibre optic industry where he was also VP of non-profit FTTH Council Asia-Pacific.

ONE Fibre partnered with Chorus to roll out the government-funded Ultra-Fast Broadband Network (UFB) into Albany, the first suburb to go live in 2012. In another nation-wide first for Kordia's Business Connect Light service and ONE Fibre, a retail customer was connected using their UFB network.

John was a graduate of the University of NSW in1962 where he operated as VK4BJN. He once lived in New Caledonia. He interests included classical music, relaying messages on the 20 m marine net, and DX radio. QSL cards keep arriving at our clubroom to remind us of him and his enjoyment of this hobby.

◂ *continued from page 11*

connector.

- The Lock button does not disable the PTT, so if you listen on the Marine band, be aware that you may accidentally transmit there too. (Always set the monitoring frequencies to low power.)
- It does not scan in NZ. The scanning is based on the use of CTCSS, tone operated squelch, and we have very few repeaters that are tone accessed. Holding the Up or Down arrow almost simulates a scan.
- Turn off the "Dual Watch" option as the receiver doesn't identify which channel was active.
- You can't disable the siren.
- There are differences between the firmware levels, so try and buy the latest units. Don't buy a coloured (non-black) unit if you want the latest. My black UV5R is 297 and the yellow one is 251, and there are noticeable differences. Buy a black one from the 409 Shop.
- After playing with this little toy for a while, I think all you need is the basic set with the long big battery for long life, a speaker mic for good audio and a BNC/SMA adapter for bigger antennas such as a J-pole. Be careful as there are several different variants of the UV-5R such as the 5R+, 5RB, 5RB etc and not all accept the big battery, so buy the combination basic unit and big battery on eBay. It's about US$60. That will give you the normal battery for a spare for just $2. Then there is only whatever you want to spend on the mic. Look at 409 Shop as they are very fast in delivering but may not have the cheapest prices. See the Miklor web site for manual programming hints and away you go.

I also had a look on the web to see what other HTs there are about. There seems to be lots of manufacturers in China pumping out these one and two band handhelds with four to five watts of power. It looks like there is a common design using Up and Down arrow keys to program these units. Some of the models you can find for less than US$75 (usually with free shipping), include FD-150A, FD-160A, FD-268A, JT-988, KG-649, KG-659, KG-669, LI-9800, PX-777, PX-888, TH-F5 and TYT-900. Have a look at eBay.com for pricing and YouTube.com for report (of varying qualities). If you are lucky you may also find a review on eham.net. The cheapest I found was a VHF set that was less than US$30 so there's no stopping a new ham getting on the air.

The bottom line is that you get what you pay for and this little UV-5R HT isn't a fully supported HT with all the bells and whistles from one of the three main manufacturers but it does work as a basic hand held transceiver, has a great battery capacity for very little money and it fits nicely in my hand. It's got good support on the internet, but if it fails, it really is a throw away item! It reminds me of an Icom 02 which has been on a diet to lose weight and then taken a heavy dose of steroids to boost its functionality and power along.

It's a keeper. By the way, did I tell you that it comes in several colours besides black? They are Red, Blue, Yellow and Camouflage. I've now got a yellow one for my Grab and Go bag.

# A Chatham Island Experience

*by Jim Reed ZL7LC (ZL1LC)*

*I always had a hankering to go to the Chatham Islands and operate as a ZL7 ham radio station. There are no hams resident there and very few people who go there operate on the digital mode of PSK31; the mode that I enjoy. The PSK (phase shift keying) club that I belong to, PODXS (Pennsylvania Ohio DX Society) also has an award that can only be fully achieved by making contact with someone in the Chathams and lots of their members would like to work it, so someone suggested a New Zealander may go there and activate it. I thought "Why not?"*

A friend of mine, Bill, went there on a fishing trip in March 2012 and stirred the interest along. He sent up a booklet and a couple of brochures. When I mentioned the idea to my XYL Lynette, she jumped at the thought of going there and read Bill's book with interest.

The three cornerstones for doing anything well is Preparation, Preparation, Preparation and then there is only the activity itself to complete the picture. It has worked well for the competition shooting events that I have attended overseas in the past, so I figured it would be the same for a micro DXpedition.

Getting accommodation was challenging. I contacted the leader of the 2009 ZL7T DXpedition and he sent me details of where they stayed. Unfortunately the email address was no longer current. In September 2012 I made contact with the Ultimate Hideaway, in Kaingaroa, near the farm where ZL9T had worked. Their rates were only $200/day for accommodation and a car, so was a little more competitive. I wanted the week of 14-17 March (fly in and out of Auckland on a Thursday) but that was already booked. In October, I was fed up with the lack of communications so emailed four other accommodation places in the hope that at least one would show interest in a tourist spending a few dollars. I heard back from two places, one the motel in the centre of the main township, Waitangi, and the other on a farm on the exposed south western coast.

I didn't know what the motel was like but having driven past, it would have been fine. There's a solid wood fence around it and empty paddocks next door so antennas would not be an issue. The owner was concerned about the power I would use, but was happy once I convinced him that my consumption would be about the same as another 100 w light bulb on all the time. Power is $0.88 / kWh, so if you are running a linear, you may be asked to contribute.

I passed on the south western coast location as I thought it would be too exposed and too windy.

With the help of Ross Morrison, the owner of the Ultimate Hideaway, I managed to make contact with the Kaingaroa farm owners and sort out their small cottage on the edge of the sea. A cottage was booked for 14-21 March 2013 and a deposit lodged.

I also tried to book a call-sign for the week of operation. NZART HQ now manage the call allocations but could not confirm that the call I wanted would be available, however it was unlikely that anyone else would use ZL7LC. It is necessary to lodge the call request a month before the desired use. I decided to create a QRZ.com page for ZL7LC regardless.

As part of the preparation I had built a Grab and Go box for the radio, an Icom 7200, with a LDG Z11 Pro tuner and a power supply. I had decided on a Buddipole™ based vertical system with elevated counterpoises for 10, 15 and 20 m and a loaded dipole for 80 and 40 m. The other bands would have to be handled with the tuner or not at all.

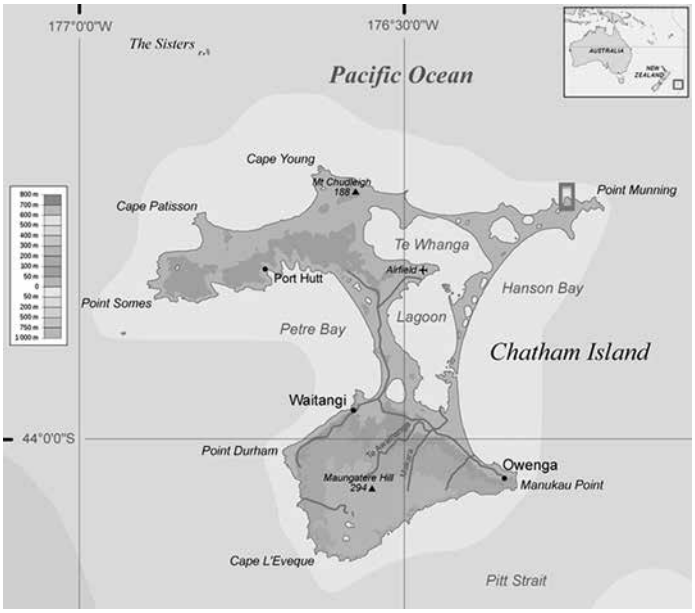
My friend had said "You won't need sunscreen," so Lynette had purchased a few items of warm clothing and some freeze-dried food. With the accommodation, meals were an option but we chose to self-cater.

I booked the tickets on Air Chathams in early November 2012 and commented that I needed some extra baggage space;. they came back to me asking how much? I told them to allow for another 40 kg above our approved 2 x 20 kg. They then told me that the plane was now fully booked. The trip was four months away! Air Chathams fly only once a week to Auckland, Christchurch, Wellington and Napier. They have a couple of planes, one of which is a 1958 Convair 580.

The Grab and Go box idea was destroyed when I discovered that LDG had down rated their Z11 Pro tuner to 30 W only, when using PSK31. I then ordered their AT-600 rated at 250 W in PSK31. The Z11 Pro would come along as a backup tuner, with the understanding that I couldn't run as much power. That changed the whole equipment shipping plan. I now had to use a large plastic suitcase and wrap all the electronic equipment in bubble wrap for the trip. Lynette and I would carry on the laptops as hand luggage.

It should be noted that as we could not rely on getting any ham radio assistance on the island, we had to be fully self-sufficient. That meant that we had to take 100% spares of everything, radios, tuners, PC, PSUs and antennas, plus enough spare fuses, tools and other bits to patch things up. It was a too expensive venture to fail because of an equipment problem.

*Jim Reed ZL7LC, normally ZL1LC, operated seven days from the Chatham Island on PSK31 and made almost 1100 QSO. He also ran 80 m SSB on the weekend for the ZLs. His XYL, Lynette, also came on the trip and took some of the photos.*




*The Chatham Island group is located about 800 km East of New Zealand. The main island (Chatham) and Pitt Islands are the only ones populated. Settled by the Polynesian Moriori people around 1500 AD and then conquered by Maori tribes in the 1830's, the island has a current population of 500+. The local time is GMT +12.45.*

I built and tested the 10 and 15 m quarter-wave antennas, based on Buddipole bits. The 10 m one was on a Buddipole 11 ft folding pole and used their telescopic whip with three radials. The 15 m antenna was a Buddipole folding whip mounted on an 8 ft telescopic painter's pole, again with radials.

I tried to make a multiband 20, 30 and 40 m quarter wave antenna, but it really wasn't robust enough. In the end, I built a 20 m half-wave tuner and antenna, which could be quickly reconfigured for 40 m as a quarter-wave ground plane. It was not ideal having no WARC bands, but there's not a lot of PSK31 on those bands anyway. High Sierra™ had a canvas bag made for holding antennas. It was ideal for the antennas and their bits and pieces.

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Communications with the accommodation people was difficult, so I tracked down the contact in Napier and phoned him to confirm a few things. You need to send them a shopping list of food prior to the trip and they will fill it.

I had planned to use the actual setup as my main rig at the home QTH, from Jan 2013 onwards, just to make sure I was fully familiar with the Icom 7200 and that everything worked. Murphy struck again and the finals on my Icom 7700 appeared to give up the ghost, so I had to change over to the 7200 sooner than planned.

It was a good move as I discovered a few things. The switch mode power supply that I used makes a loud noise with its fan, so it needed to be placed somewhere where I couldn't hear it. The 7200 setup was a bit tricky hooking it into my normal base system, but I got it on the air, had a few contacts and one useful report on my signal. The 7200 does get quite warm, so it needed extra fans and a bit of construction for mounting them. This worked well and allowed me to run 60+ W of PSK31 with a high duty cycle with no major hotspots in the unit.

The operating procedure I used was quite simple. Tune to the appropriate frequency (7.037, 10.140, 14.070, 18.100, 21.070, 24.920 or 28.120 MHz) then pick a quiet spot in the PSK audio range and tune the transceiver so that spot corresponded with 1500 Hz on the Ham Radio Deluxe® display. Then start working. When there was interference from nearby stations, you could either bring in the fixed filters or wind in on or both sides of the filter. When running Split operation, you set your transmit frequency at around 1300 Hz on the HRD display and played with the filters as you needed.

Early in the New Year, I advised all the DX bodies I could find of the forthcoming micro DXpedition. I had one email bounce from the *DARC* and *Break-In* came back to tell me that the February issue had closed, so I would not be in that magazine before I returned; *QST* looked more promising.

I joined Club Log and promoted that on the QRZ.com site as being the place for logs. I also started to use the paper log style that I would use on the Chathams, just to get familiar with it.

After the third email asking me to operate on a mode or frequency that I hadn't advertised, I updated the ZL7LC web page asking people not to make such requests and advising any that were received would be treated as SPAM. Some people think you are at their beck and call and will operate JT65 on 160 m, moon-bounce, just so that they can fill in a spot on the map!

Mailed off my application to NZART for the ZL7LC call in late Jan and paid the necessary $50. Got a call certificate back within ten days.

I was contacted by David EB7DX, who offered to be the QSL manager and produce a QSL card booklet of eight photos. Sounded too good to be true but after a few emails I decided to go along with him. It certainly saved a few headaches to have someone else on your side.

I printed off the Google Earth picture of the site. Luckily I got the scale down to where 100 ft equalled 2" on the picture: then I could work out exactly where I could position the antennas and roughly what coax lengths I would need.

I purchased a CI-V control adapter off eBay® but had a few problems getting it to work. Finally got the drivers sorted out but it cost me $125. The problem came from the fact that I run the 64 bit version of Windows 7 on both laptops. All the drivers around work fine on XP, but Windows 7 does some funny things. The only driver that will really work is the Vista one; and then you have to choose the right one.

The $125 cost came from the Baofeng UV-5R that I purchased off Ebay®. It used the drivers that I needed to make the interface converter work for their programming cable. Once I had the driver, I then had to create new folders in the C:/ drive as Windows 7 protects files in the Program Files folder and go through a convoluted process of installing and rebooting, but it worked in the end.

The pace of things seemed to pick up in March 2013. Alison, the lady who set up this accommodation, phoned me to check that things were on track. She was going to move out of her house into the cottage beside the sea; unfortunately her house was built after the Google Earth image so it doesn't show on the internet. I said that we would be happy by the sea and she need not move for us and that really worked out best in the end. She also told us that power is from a diesel

*Air Chathams fly this Convair 580 plane to three locations in New Zealand carrying passenegers and freight. They also run freight only flights. This 1950's vintage aircraft has been re-engined with turboprops and is very pleasant to fly in.*

generator and that there were plenty of trees about.

The bags were packed and weighed at around 80 kg between us, in three bags and two back packs. I had created a couple of DXpedition caps and sent one off to David EB7DX. I have another to send to the person who QSLs with the best QSL card. David will select the lucky person.

Having done the preparation, the trip went well.

**Thursday 14 March**

We left home at 9:15 am and went to the airport where eventually we found the Air NZ person handling the Air Chathams flight. She wasn't used to doing it and it was a bit of a laugh. We weighed the bags and eventually gave her a cheque for $75 for excess baggage. While in the queue, we met the mayor of Chathams.

Getting on the plane we were only 15 minutes late, so not too bad. You have a seat assigned on the boarding pass, but as soon as you get on board, the hostess tells you to sit wherever you like. They then tell you to advance your watch by 45 minutes and you need to move your time machine back 50 years. Fantastic! People would pay good money to ride in a 1958 Convair 580, as a vintage flight. I believe it has been re-engined with C130 Hercules-like turboprops. There was nothing wrong with the flight or service.

The Chatham's airport is what you would expect for the population of 600 or so. Alison Barr was there to meet us and drove us back to Kaingaroa. It's all unsealed roads and you have to watch out for wandering stock, either wild or which has walked through the fence. Fence battens are in short supply in many places.

We stopped off at the farmhouse to verify that I could use the internet WiFi and saw the remains of the Sunderland and another vintage plane (Fokker Friendship 100)

The cottage by the beach was just what we needed. I put up a Windom using an old shelter for the telescopic pole and an old long-drop toilet fixture to support one fishing rod. The other end of the Windom was attached to a tree. 20 metres tuned beautifully and the other bands were not too bad. Until about 1 am I worked just over 100 stations. I got up at 6 am and worked another 50, mainly on 20 m, with a dive into 30 and 17 m.

**Friday 15 March**

Put up the 15 m vertical ground plane and with two antennas, we clocked up over 150 QSOs for the day of 14 March (Z).

Put up the 20 m half-wave end-fed

*The cottage taken from across the bay.*

*The Icom 7200 was modified with additional cooling for running PSK31 continuously at 60+ watts. The Windom was tuned by an LDG tuner and a switched mode PSU provided the power. 100% backup of all items was available. A paper log was also maintained.*

and it wasn't much different to the Windom, but the noise was a little lower. It fell down overnight and was a bit of a pain, being so tall, so kept putting back for a couple of days and then stacked it away.

Lynette, my XYL, went for a wander around the place. There were once 200 people here in Kaingaroa, but with the fish processing plant closed, it's down to 40, and they are hard to find. She also saw the Moriori tree carvings. While these are supposed to be hundreds of years old, one of the locals claims to carving at least one tree.

Weather was cool, windy and cloudy. We did see the sun for 30 minutes, late in the afternoon. Also, there's very few birds around, even in the sea. The wekas that are supposed to be everywhere are not that common. We saw only one around the cottage, at times.

I saw a possum or two when I was checking the antennas at night but amazingly there are no rabbits in the Chathams.

**Saturday 16 March**

Lynette went into the main town of Waitangi. She went all over the place and saw half a dozen people but could not find the horse. Apparently it was in the back paddock. Prices are very high.

I worked 15 and 20 m and clocked up a good number of contacts. I also wandered around and had a look at things. There's a lot of junk around and rubbish where people have either walked away or simply dropped stuff on the ground. You would not call this a "Clean Green country".

Uploaded over 450 QSOs to Club Log and dumped the email into a folder to be sorted out at home. The wife of the farmer gave me a nice piece of fish that had been freshly harvested. Also found out how the generator was refuelled. (The farmer tops it up for you when it gets down.)

Found quite a few alligators in the evening; all mouth and little ears. Could send out a strong signal but could not copy my reply and/or could not hear their compatriots and talked all over them. I beat most of the respondees into working Split when it gets busy but there are still a number who do not understand and kept talking on my transmit frequency.

**Sunday 17 March**

Propagation was dropping a lot and it was very hard going. The morning wasn't too bad but the afternoon got worse. Only managed 34 contacts in the new day of 17 Mar Z. In the evening 80 m was fine and there was even a VK who joined the local Counties and Awards net.

Weather was windy and blustery and not very sunny. It wasn't too cold though. Lynette managed a short dip in the water but didn't stay in for too long.

**Monday 18 March**

With the poorer propagation last evening, we went to bed early and I managed a longer sleep. In the morning the propagation was worse than before; only 40 m was active and that had only one station on my PSK waterfall. On previous mornings, 20 m had been buzzing. I was up for nearly three hours before I got my first QSO, a QRP station in Italy.

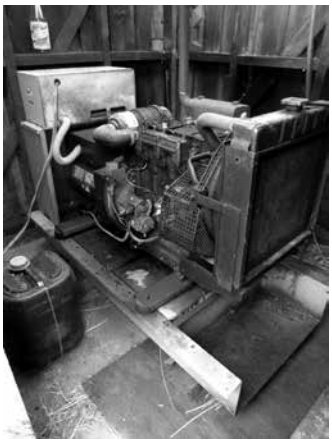
We gave up and went into the metropolis of Waitangi. It's an hour and a half (53 km) by shingle road and when you get there, there's not much, a pub, a bank which doubles as the post office, a police station, a court house that looks like it is shut most of the year, and a few other commercial places, the best of which is the Cafe which has great doughnuts, serves a reasonable coffee and has great cod and chips.

Very few of the Chatham locals use credit cards or EFTPOS and all are very laid back. It's a cash based society with a very "She'll Be Right' attitude. Cars and houses are left unlocked.

We drove all the way to the South-East corner of the island, to Tommy Solomon's (the last full blooded Moriori who died in the 1930's) statue, which is past Owenga. Everybody waves to you as you meet them on the road. It was spitting and drizzling all the way. Then we turned around, had cod and chips at the cafe and came back to the base camp.

There are windmills somewhere on the road to Owenga, but we never saw them. We did see the diesel power station that supplies island power and seems to serve only the bottom half of the island. Kaingaroa folk still use their own individual generators.

Radio conditions were so dead that I had to check to see if there was anything attached to the radio, but the antennas were still there and it worked fine on transmit. Propagation conditions were just terrible but slowly improved. However they were never good. I bashed away on 20 m slowing catching the odd QSO.



*Power was from a 10 kVA Lister diesel engine alternator, which needed fuel and starting and stopping.*

In the evening there was a plague of flies around; they are different to the house fly and are known as Kelp Flies.

**Tuesday 19 March**

The storm had dropped away and we were back to a normal day of light winds and grey overcast skies. Temperature around 17°C.

When I got up, I could hear plenty of Europeans on 20 m, and worked six or so, but they all struggled to hear me. I keep plugging away and managed to haul a few in but by 21:00Z there was nothing happening.

Evening band conditions were very bad. Internet was down too and rain was hosing down. We lit the fire to keep warm and it was only March. Went to bed early as the propagation had died away. Was up at 2 am and worked stations, slowly, until nearly 8 am by which time 20 m had faded away again and all the other bands were dead.

*The 15 metre quarter wave vertical on the left and the support pole for the 80 metre Windom on the right, beside the cottage. A half wave 20 metre vertical was used, but the Windom was mainly used as it performed very well.*

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# QSL Bureau

by Barry Stewart ZL2RR
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Greetings to all readers. Your QSL Bureau is still functioning at a leisurely pace due to fairly low levels of incoming QSL cards. An odd bump in the graph now and again, e.g. 634 QSL cards from UA, 734 from HA and 195 from HB did give a boost to the next postings to the ZL Sub bureaux. A posting arrived today from the 9V Bureau; just 5 cards were enclosed.

Following an enquiry re lack of QSL cards from G-Land, I checked through the Bureau records and found that it is nearly three years since we had such a posting arrive. August 2010 a posting of 1250 cards turned up from the RSGB and the one previous to that was a posting of 1400 cards received way back in August 2007! Prior to 2007, a yearly posting from RSGB was the norm. Those postings use to amount to around 1100 – 1200 QSL cards so there has been a marked down turn in QSLing by the Gs since that era!

Those amateurs that have received a G-card from the NZ QSL Bureau over the last thirty-odd months would have been received here from an individual's posting. Over the last few years the Central Bureau has received a marked increase in the number of small postings from individual amateurs around the world; particularly from Brazil and Romania.

An update now on postings to the local Sub-bureaux since my last report: ZL1's Sub-bureau has had a 5 kg parcel of QSL cards posted to it (with another today; 1 July, just in time to make this column!). The ZL2-Sub-bureau also had a 5 kg posting; this one early June after Tony's return from his part-time mini-DXpedition. Ken at the ZL3-Prefix Bureau has had seven 700 g postings whilst Dave at the ZL4 Sub-bureaux had five 700 g envelopes posted to him during the same period.

I recently received the following note from Turkey: 'QSL policy change as of January 2013'.

TCSWAT had a "QSL 100% via the bureau" policy for the last six years. We either sent our cards by post or hand delivered them at Friedrichshafen Messe; in return, we collected our cards from the TA Incoming QSL Bureau. There has been some changes in the TRAC administration, as well as its incoming QSL Bureau and it seems neither we nor anyone else no longer will be able to receive any cards from them. We tried to learn about the future of the bureau but our e-mails yielded no positive results.

Because of this we now have to change our QSL policy. Our activities in 2013 will be "Direct only-SAE+ 2GS or IRC to TCSWAT PK. 73 Karakoy 34421" address. If we happen to get any cards via the bureau in the future, we will answer them after all direct requests are answered. This means, delivery to the bureaus will, hopefully, eventually start but it will take a minimum of 2-3 years at the best. We are sorry for all the inconvenience caused by the TRAC incoming QSL bureau. We were very happy to receive your cards via the bureau and send you our cards!

As you know, TRAC Outgoing QSL Bureau does not exist at all (theoretically there is one, but please try to remember the last time you received any cards from them, if you can?). We, as TCSWAT, are proud to have delivered more than 90 000 cards of our own plus more than another 10 000 cards belonging to our friends (weighing about 100 kg every year), by our own means! This batch is the last one you will receive for some time from us and we will appreciate if you can send us an e-mail when you receive it from the post <Talhz@tcswat.org>

73 from TA1HZ Tevfik, The usual QSL Manager.

I leave you to ponder on this! As an IARU Society, we are committed to exchanging QSL cards via IARU-members only.

On behalf of NZART, I thank those members who include a donation with their QSL cards from time to time. This assistance with helping to assist in reducing the Bureau's operating costs is most welcome, especially this year, following the large number (300 at June 1 AGM) of non- renewal of subscriptions for 2013 by previous members. (No murmurs about the usual bi-yearly hike in postal charges from the NZPO at time of compiling this column.)

If you have any questions, queries (QSL Managers' addresses, etc) or comments please feel free to contact me either via mail (1 Caversham Road, Westmere, Wanganui 4501 or PO Box 857, Wanganui Mail Centre 4540), or Email: <ZL2RR@xtra.co.nz>

73 *Barry ZL2RR*

## DSIR World War 2 Narrative No.3: Radar, Copy No.3

(Archives New Zealand Reference AAOQ W3424 16)

The Narrative is the history of the NZ Radio Development Laboratory from February 1939 until January 1946.

The 694 page document was originally completed in July1948 but it was, for some bizarre reason, immediately classified and remained so until 1992. While the rest of the world was hearing about everyone's radar history, our own history of radar was suppressed until Bob Unwin wrote a paper [1] in 1992, compiled from his own memory and that of former colleagues.

Shortly afterwards one of the original copies was found and declassified. Thanks to the combined efforts of Archives New Zealand and the University of Canterbury Library it has recently become available for public access at <http://digital-library.canterbury.ac.nz/data/library7/ebooks_open_access%5Cww2_narrative_radar.pdf.>

Chapter 9 describes the Operational Research Section whose head was Dr Elizabeth Alexander. The work of Dr Alexander on the "Norfolk Island Effect" led directly to the post-war development of radio astronomy in Australia [2]

There are appendices with technical details of the transmitters, receivers and aerials.

[1] Unwin, R.S., 1992,The development of radar in New Zealand in World War II. The Radioscientist 3, (1). Reprinted in IEEE Antennas and Propagation Magazine, 1992, 34, 31-39
[2] Sullivan, W. T.,2009. Cosmic Noise: A History of Early Radio Astronomy, Cambridge U.P., pp 128-129.

◂ *continued from page 15*

**Wednesday 20 March**

The dreaded Kelp flies were back but not as many as the previous days. Weather was relatively calm.

The radio bands were dead in the morning except for the occasional opening of 20 m. In the evening it was much better with most of the traffic on 20 m but some on 15 m. When 15 m died away at 08:40Z, I took down the Windom and packed everything up.

**Thursday 21 March**

We were up early to get to the airport, and arrived before most of the other passengers. Another $80 for excess baggage. It was a brilliant day, the best we had seen since being there. For no apparent reason, the plane was 30 minutes late, but nobody minded as we were going home.

**Later**

The aftermath of the trip was sorting out the logs and QSOs. I had a number of busted QSOs and a few people came back to me stating that we had worked. They were in my log as not fully confirmed but I gave them the benefit of the doubt as we had exchanged information, but had not quite made the last exchange. There were a couple of clowns who had me scratching my head, because they came back with dates and times that were incorrect and I rejected their QSLs. Eventually both of them told me that their PC clocks were out, one by a whole day.

The log was loaded on eQSL and David EB7DX is to load it onto LOTW. He has already received some QSL cards and is creating a photo QSL pack from the snaps I sent.

In summary, it was a good trip and I was very lucky to have Lynette along. Everything worked as it should have, other than a couple of days of poor propagation. The Windom antenna and LDG tuner really impressed me with their wide band performance and the Icom 7200 ran like a dream, pumping out a nice strong, clean signal. The 100% redundancy gave me the confidence to just get on the air and work and we clocked up over 1100 QSOs, 99.5% on PSK and a few on 80 m SSB.

The only thing that could have been better would be knowing that the call you want to use would be assigned. That would then have allowed me greater publicity in publications like *Break-In, QST, CQ* etc before their publication deadlines. Most publications need at least three months notice, and that's not possible under the current process.

βi

# Satellite Orbits

Andrew Barron ZL3DW
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HamTV from the International Space Station: 2422.0 MHz and 2437.0 MHz frequencies have been announced for the new Ham Radio Digital TV transmitter which will transmit from the ISS in the amateur radio 13 cm 'S' band. The main mission of HamTV is to perform school contacts between the astronauts onboard ISS and the schools, not only by voice, but also by unidirectional video from the ISS to the ground within ARISS program. The S-Band video transmitting station will be able to broadcast images from the ISS during the school contacts or other pre-recorded video images up to 24 hours a day. It is planned to transmit DVB-S signals on 2.4 GHz at either 1.3 Msps or 2.3 Msps with 10 W of RF from the ISS Columbus module. The equipment is being developed by Kayser Italia under contract with the European Space Agency using a Canon XF-305 camera provided by NASA. The equipment is currently slated for deployment to the ISS on Japan Space Agency's HTV-4 in August 2013. HTV is Japan's H-II Transfer Vehicle for resupplying the International Space Station. A 90cm dish with circular polarised feed and a LNA should be adequate enough to reach minimum system requirements. A standard satellite DVB-S "Freeview" type set top box will display the downlink. Of course the space station is moving fast so tracking will be essential.

I knew there were ham applications for the Raspberry Pi micro computer and I just sold mine! Dave Akerman M6RPI uses a Raspberry Pi computer board to send pictures from near-space balloons, they are transmitted using Slow Scan Digital Video (SSDV) on 434 MHz. He is hoping to send a balloon all the way to Russia and aspires to photograph the Northern lights from space, possibly taking advantage of a gyroscope-stabilized ballooning platform developed by another society member. In SARLNews of 7 April radio amateurs in South Africa were challenged to try their hand at covering distance with Milliwatt power into the antenna using a Raspberry Pi. This was in response to Eddie Bennett, G3ZJO, of Northampton in the United Kingdom who used the 10 milliwatt of RF that can be generated from the Raspberry Pi computer board and was heard at over 2000 km on the 7 MHz band.

The Raspberry Pi board can be made to operate as a WSPR mode transmitter covering Low, High and VHF frequencies up to 250 MHz. G3ZJO connected the board via a low pass filter to a dipole for the 7 and 14 MHz bands. The Raspberry Pi is a credit-card sized computer board that plugs into a TV and a keyboard. The Raspberry Pi Model A and Model B boards are supplied as board only, and come without operating system, SD card, power supply, keyboard, case or cables.

*The S Band amateur digital television transmitter on-board the International Space Station.*

For the latest satellite news subscribe to the Google group <https://groups.google.com/forum/#!forum/rec.radio.amateur.space> you do not have to get any annoying emails from the group. Look for the weekly 'WSR-xxx AMSAT Weekly Satellite Report' and 'AMSAT News Service Weekly Bulletins'. For current status of amateur radio 'hamsats' check <http://oscar.dcarr.org/>.

Mani VU2WMY, posted this on the AMSAT Bulletin Board. "It gives us great and immense pleasure to say that 'HAMSAT VO-52´ completes eight fruitful years in orbit contributing to the wonderful cause of 'Amateur Radio Satellite Communication'. The overall health parameters are excellent and we do hope that transponder(s) on-board 'HAMSAT VO-52´ would continue to render good services for many more years to come".

The Slow Scan TV (SSTV) experiment on the International Space Station (ISS) was active on July 2-3, on 145.800 MHz FM (this is not the S band TV mentioned above). The MAI-75 experiment worked very well producing some stunning images. On Windows PC's the free application MMSSTV can be used to decode the signal, on Apple iOS devices you can use the SSTV app. The ISS Fan Club website will show you when the space station is in range.

The amateur radio CubeSat FITSAT-1 , also known as NIWAKA, burnt up in the Earth's atmosphere in the early hours of Thursday, July 4, 2013. It was built by students at the Fukuoka Institute of Technology and was one of five CubeSats launched to the International Space Station (ISS) on July 21, 2012. FITSAT was unique in carrying an optical LED array to flash Morse code to observers on Earth.

As always I am keen to hear about and publish details about your satellite activities, so please drop me an email to <zl3dw@nzart.org.nz> and photos are especially useful. I am also very happy to answer any questions that have you puzzled or will help you get started.

73 *de Andrew ZL3DW*

Next deadline for copy is
**10 September 2013**

# Digital Modes

Murray Greenman ZL1BPU
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There seems to be so much to write about in the digital field at present that I am spoiled for choice! May it continue to be this way! I have for you a brief review of the Flex – 1500 SDR radio, and a review of the AA-1000 Network Analyser. There's also news of some home-grown RTL-SDR software.

### AA-1000 VNA

In the last column I mentioned the new range of Network Analysers available from RigExpert. Peter Dare ZL1PJ has sent me a detailed review of his AA-1000 Virtual Network Analyser. My grateful thanks, Peter. He writes:

"I recently bought a RigExpert AA-1000 antenna analyzer. I was impressed. Truly, a hand-held, battery-operated VNA. It is not cheap, but you get more than you paid for; and you could buy 20 of these for the price of one Agilent E5062A. It does have some clunky aspects, but it does work, and well. The RigExpert web site[1] describes their range of analysers well, with a comparison chart, and has some helpful application data as well.

"The AA-1000 covers 0.1 MHz to 1 GHz, and the frequency display, which is in kHz, is one thing that I found 'clunky'. The handheld does put a space between kHz and MHz, but the supplied software for the PC doesn't! The software that I received doesn't run under W7 but will run in the XP 'safe' mode of W7.

"The AA-1000 will measure and display on the local screen and in a popup table on the PC:

- ·Frequency
- ·SWR
- ·Return loss
- ·Z series
- ·|Z|
- ·Phase
- ·Capacitance/inductance
- ·R parallel
- ·Z parallel

"The instrument has a TFT display but it doesn't have great resolution. The AA-1000 can collect and store (in 90 memory slots) 80 data points, not too good if you are doing a wideband sweep, but adequate for a narrowband one. The resulting 'curve' can be pretty jagged as the software connects data points with a straight line. Sweeping under software control will do much better, with up to 1000 data points (selectable). Data transfer by USB is slow, but the important thing is that the AA-1000 will collect and store the data while at the top of a tower, say, and 80 data points is adequate for many applications. You could take it into the field, make adjustments, then back to the workshop and download a lot of data for the record!

"I was impressed by the accuracy of the frequency indication. I swept a cavity at 450 MHz with a spectrum analyzer and tracking generator, and then used the AA-1000 set to 450 MHz with a 10 MHz span. The local display was a little off, but the saved sweep downloaded to the software interface showed exactly 450 MHz as the centre of the passband. Sweeping it under software control later improved the appearance, but not the accuracy.

"The AA-1000 has a TDR (Time Domain Reflectometer) function. I connected a length of unterminated cable to it, and it told me the position of the 'fault' to within a cm. It will also measure capacitors and inductors – at RF.

"As a test, I used a range of 50 ohm terminations, some home-made, various combinations of R, L, C, and antennas. I was impressed. True, the measurements diverged somewhat as the frequency approached 1 GHz, but for what the AA-1000 was designed to do, measure antennas and transmission lines, it could not be faulted."

### Simple MEPT and Grabber

Daniel MW0UZO has reported that his new QRSS MEPT and Grabber are described on his web site[2]. I had a look, and they certainly are interesting. The MEPT transmitter for 30 m uses a PIC processor and a homebrew crystal oven. I have to say that the stability isn't stunning, but seems adequate for the purpose. Of course making your own crystal oven perform well requires you to know quite a lot about the crystal and oscillator characteristics in order to do a good job. Cheap crystals generally don't have a convenient turnover (flat point) in the frequency vs temperature curve at which to operate for best results, so the design no doubt relies on tight temperature control at a point where there is still a slope. This limits the performance with changing temperature. (If you want to have a go at making your own crystal oven, write to me for some hints!)

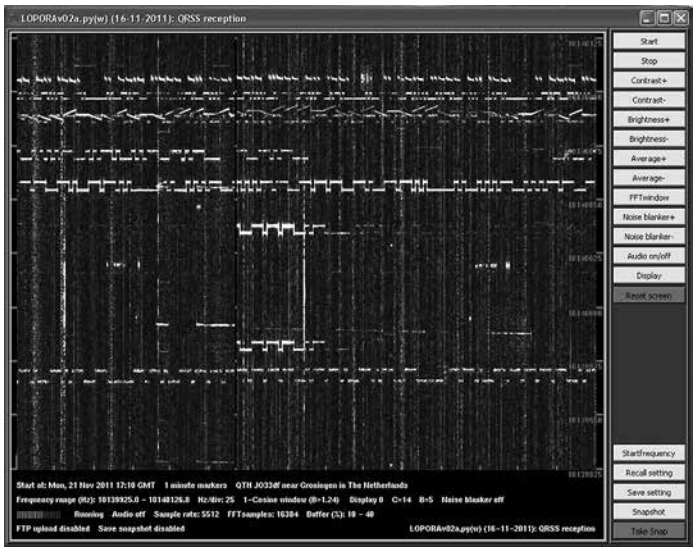


*Figure 1. Screen-shot of LOPORA on 30 m.*

The transmitter runs 2 W output, using an IRF510 FET, and can transmit many modes, including my favourite, S/MT-Hell. There are photos and screen shots on the web site. This is a really neat little unit.

The MW0UZO Grabber receiver uses a PC, an RTL-SDR and SDR# software, followed by LOPORA grabber software by PA2OHH[3]. More about that in a moment. The interesting part of the Grabber receiver is how Daniel has achieved sufficient receiver stability (these SDR modules use a simple crystal reference and are hardly stable enough for narrow-band QRSS). He has removed the 20.25 MHz crystal from his SDR module, mounted it on a copper block, and is operating an oven controller on that as well.

By the way, Daniel also describes a very nice solid-state 600 W HF amplifier on his website. It uses four MRF-150s and is based on the Motorola EB-104 design.

### LOPORA Grabber

This most unusual software by Onno PA2OHH is written as a Python script. Since this is just a text file, it means that anybody can tweak the software to suit a particular purpose. It also means that it's not for the faint-hearted! Python is not very difficult to install.

For those of you who haven't been reading this column assiduously for the last decade, a Grabber is a sound-card audio spectrum analyzer program, which displays received signal frequency vs. time, with signal strength as brightness (like ARGO); it then captures the screen image, typically every 10 minutes, and posts the image on the Internet. Grabbers are generally arranged to receive QRSS3 signals (such as slow Morse with 3-sec dots).

The display of LOPORA is very good, sharp and clear. It has most of the on-screen features you'd expect, and in addition has a noise blanker, which should be especially useful on LF and MF. Unlike ARGO and others, the display does not scroll, rather it over-writes, but this does not affect the Grabber function. Understandably a program written as a script is slower executing than one written (for example) in C and compiled as an executable, but it should run reliably on most modern computers. In the example (Figure 1) the span is 150 Hz, and you can see both frequency markers and time markers.

The developer admits that LOPORA isn't as user friendly as ARGO, but it looks to me to be very versatile, and easily set up as a Grabber. As a first-time Python user, it took me a while to get it going, but once I had the correct modules loaded and had tweaked the code a little, it worked well. Is anybody here using it? If

so, comments please! Onno also runs LOPORA on his 30 m internet Grabber.[4] I understand that QRSS VD (another QRSS spectrogram/grabber) by Scott AJ4VD[5] is also written in Python.

By the way, Onno has a really nice example of stacking Grabber images on his page, and the example is my (ZL1EE) 100 mW transmission on 30 m!

### GPSDO understands PFORTH!

I was really surprised when I read this report on the 'Time Nuts' forum. Someone had discovered that the HP/Agilent Z3810 and Z3805 GPS disciplined references include a PFORTH interpreter! Just how this was discovered I can't imagine, but it appears that the feature was provided as a low level diagnostic tool. To enter PFORTH you enter SYST:LANG: "PFORTH" at the SCPI> prompt, and to exit to SCPI again you can enter either WATCH or HALT.

The list of commands and functions can be determined by sending the command WORDS. I've since determined that the PFORTH interpreter is included in the Z3815A as well, so those of you with one of these popular references can have a little dabble – but be warned, the feature is undocumented and you might cause considerable and permanent damage, such as erasing the memory. It would be best to restrict yourself to asking for performance data rather than changing anything.

### Trends in Consumer Electronics

Most of us older hams will at some point have pondered the trend towards throw-away electronics, lack of (or cost of) repair, and the shortage of parts for home construction, now that everything is highly integrated and mass produced.

I admit to looking back on the 'old days' with a certain nostalgia, but have had my attitude modified recently by considering the cost of modern consumer electronics, and the performance of the equipment, compared with that of even 20 years ago. I can quote a few examples. Take for example the modern 3G smart phone. Twenty years ago a cell phone would have cost a lot of money, and been just an analogue phone, big and clunky. Now, you get a 3G phone with integrated services including web browser, digital camera, MP3 player, GPS receiver, very accurate clock and other smart features for $300 or so.

There is no doubt about it; a good SDR radio setup demands the very best quality audio system, and I'd been looking for one for a while. I recently stumbled on what must be the electronics bargain of the year, a Creative ZiiSound T6 speaker system to use on my radio computer. The manufacturer's list price for this unit is expensive at US$500, but I got the last shop demo model for NZ$37.50! This multi-speaker unit has the most beautiful sound I've ever heard from a home-theatre type system, strong smooth bass and great clarity in midrange and treble. In addition to the usual Line Input, the connectivity includes USB (looks like a sound card) and Bluetooth! I use the USB connection on my SDR radio computer, and play music to it off my network file server from my laptop, using the supplied Bluetooth transceiver. I can also play music to it from a Bluetooth-equipped 3G phone. Twenty years ago, a stereo was a stereo, and maybe had an FM tuner and CD player, but cost a lot more.

### What a change in 20 years!

The final example I quote is one of my recent extravagances for the caravan, a small (19") LED TV set. Not only is it a digital TV and radio with Freeview, but it has an internal DVD drive and will play video, audio and MP3. It also has a USB port and will play video, audio or MP3 from a memory stick, and if you plug in a hard drive, it will record video to it, giving the TV set a video recorder function! It runs off mains or 12 V at about 20 W. All this for $249! Think back 20 years; TV sets had big heavy CRTs, no remote controls, used 300 W and cost say $800!

### Home-grown SDR

Con Wassilieff ZL2AFP, our own intrepid windmill-tilter, software designer and alternative thinker, is coming up with his own software for RTL-SDR! I've had a brief play with a couple of early prototypes, and while it may never be a substitute for SDR# or HDSDR, the software has some interesting aspects, one of the best being that it's easy to get going. It worked straight off with both of my dongles. Con's plans are firmly concentrated on providing good direct-sampling performance on VLF and LF, but I found it worked just fine for wideband FM reception as well. You'll be able to keep in touch with his developments in the *Break-In* 'Longer Wavelengths' column.

*Figure 2. The Flex-1500.*

### Software Defined Radio – the Flex-1500

Two of my friends recently bought up-market SDR transceivers, and this gave me the opportunity to borrow and review a slightly older but much respected SDR transceiver, the Flex-1500[6]. This is a little box (see Figure 2) about the size of a frozen dinner, and runs 5 W PEP on all bands from 160 m to 6 m, and will receive down to 10 kHz. It also runs off 12 V and has a QRP output suitable for transverters for other bands.

There are no controls on the Flex-1500 apart from the power switch! Oddly, the blue LED on the switch continues to glow when power is 'off'. The unit is completely controlled by the computer via USB, and the software 'front panel' is very complex (see Figure 2). On the computer there are controls for everything, available all at once. A prominent and good-looking spectrum and waterfall display are featured in the centre.

The microphone and headphones plug directly into the transceiver; the microphone plug is an unusual telephone type, and there is no internal speaker. The microphone provided was a high quality Heil HM-5, and does have PTT. The receiver audio is rather weak, and may be inadequate for the hearing-challenged ear. I don't like operating with headphones, so I plugged in a small 'X-mini' amplified speaker unit, and audio was then adequate, but I still had to set the audio gain to full-scale.

To operate the transceiver you must load the proprietary PowerSDR software. I understand that the communications protocol is unpublished, and there is therefore no suitable third-party software. The software looks like typical SDR software, except of course there are also transmitter controls. The band buttons are quite convenient, but surfing short-wave bands is less so. You tune by either dialling numbers in either VFO, or by dragging

continued on page 20

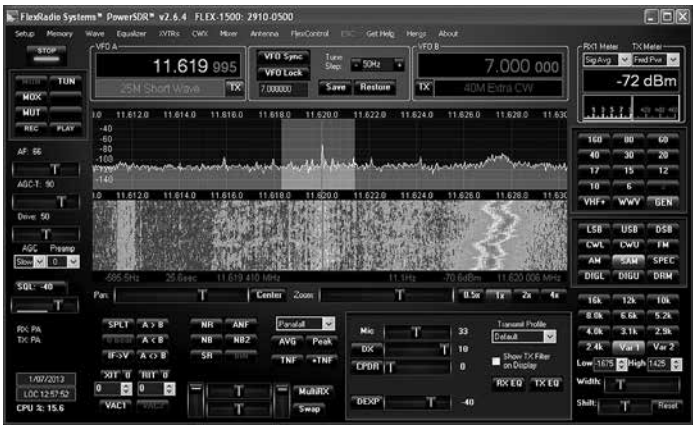


*Figure 3. The PowerSDR screen.*

# Hacking the VK5JST Antenna Analyser

*by Robert McNeill, ZL4IG*

*This article describes a voyage of discovery by the author into the world of microprocessors and test instruments with some useful links, findings and explanations that other hams similarly disposed may find useful when embarking on their own adventures.*

After years of wishfully contemplating an antenna analyser, I finally found $A 145 for a VK5JST Aerial Analyser kit from the Adelaide Hills Amateur Radio Society (1). This would not be the most straightforward kit I have ever built, requiring a little dexterity with drills, hacksaw and files, and calling on more than the occasional use of grey matter to assemble it. But, at the end of the construction effort I felt I had actually built something, rather than just having rearranged some components. This was very satisfying. The instrument gave results within ± 10% at an SWR of 6 and ±1% at an SWR of 1 up to 32 MHz, which more than satisfied my requirements and according to ARRL (2) is about as good as it gets. It is not surprising that there are now over 12 000 of James VK5JST/VK5TR's analysers in use around the world.

I had taken some months to decide on which analyser to buy and had settled on the VK5JST because not only was it the cheapest I could find, but other amateurs had written upgrades for its PICAXE microcontroller firmware and in theory it wasn't going to be difficult for me to write my own firmware hacks. Furthermore, if it broke down I should be able to fix it. There is also scope for hardware modifications, though I wasn't contemplating trying them.

Once I had built the kit I found that it was easy to connect it to the serial port of my laptop and so it wasn't long after completing construction that the analyser's firmware had been hacked to display my callsign on start-up. I was confident that this was neither necessary, nor going to improve the functionality of the instrument. However, from figuring out the hack from studying the software and checking the manufacturer's datasheet downloaded from the Internet, I now understood more or less how the industry-standard Hitachi HD44780 LCD display protocol worked and so LCD displays were no longer a complete mystery to me.

Uploading the new firmware had been easy because the PICAXE has a very simple RS-232 interface, comprising just two resistors from the RX and TX pins that make it probably the most straightforward microprocessor in existence to work with. This and its simplicity, I suspect, are the reasons for much of its popularity. Anticipating such interest, the necessary two resistors come with the kit.

As with almost any modern PC, a USB – RS-232 adaptor cable is needed to connect the RS-232 cable to my laptop. I check which port I am using by looking at Start/Devices and then Printers/File/Device Manager/Ports(COM & LPT) when using MS Windows. You need to have the bitrate and data flow settings correctly set: 8N1 (8 data bits, no parity bit and 1 stop bit) is standard and the 28X1 PICAXE with a 16 MHz clock that came in my kit runs at 19 200 bps,

*Figure 1. Photo of the ZL4IG version of the VK5JST antenna analyser on start-up.*

which is not what I expected. A word of caution here: when you use an USB – RS-232 adaptor, the PC loses some mildly useful status information.

PICAXEs come loaded with a version of the BASIC (3) programming language that looks little different to what you would have found in the early 1970s. It lends itself to what we used to call 'spaghetti programming', especially as the VK5JST code has eschewed using sub-routines to, I believe, run faster. Things are not helped by PICAXE BASIC limiting you to unimaginative variable names of the form 'b2' (short for 'Byte 2') and integer arithmetic. On the other hand, Revolution Education (4), who make the PICAXE, provide excellent manuals that are easy to read and, like the PICAXE Programming Editor used to write and upload the code to the PICAXE, can be downloaded at no cost. It doesn't take long to figure it all out and the average ham should be able to quickly get up to speed.

The Adelaide Hills Amateur Radio Society website pointed me to Jeff ZL1BIV for the PICAXE code needed to enable the analyser to upload measurement data to a PC and so I duly contacted him: it turns out that the TX/RX pins for uploading firmware can also be used for "talking" to the PICAXE. Jeff kindly emailed me his code that he said was now obsolete and gave me some pointers. As I noted above, the PICAXE is very simple

◂ continued from page 19

the frequency scale on the spectral display. Moving more than a few kHz is best achieved by dialling the numbers. This is not so convenient when you don't know what you are looking for, dragging a wide-band frequency display is much more convenient in this respect. Unlike with an RTL-SDR, you can't click on the display to change frequency, as the reception frequency is fixed dead centre.

Computer processor load is pleasingly low, and installation was not too difficult, although I found when I ran it on another occasion that I had to reload the drivers. The software has been known to lock up, which can be embarrassing in the middle of a QSO! It pays not to fool with other software, such as reading your email, on the same computer while operating.

The performance of the receiver I found to be very good. It has great clarity of received SSB signals, even when very weak, good AGC and very good strong signal handling. AM performance using the synchronous detector is also quite good. The preset filters are excellent, and you can adjust shift and width easily for best audio. Having been used to a spectral display of 1 MHz using the RTL-SDR and HDSDR software, I found the display span a little limited, but of course compared with a conventional receiver with no spectral display at all, it is still very useful.

The transceiver reference is a TCXO, and is very stable. However, one feature I thought especially nice was that you could also use an external 10 MHz reference (such as a Rubidium or GPSDO device), to lock all the oscillators, so there is never any question about the frequency accuracy or stability.

In my experience the transmitter is a bit tricky to operate, especially setting up the audio system for SSB, as it's always difficult to assess your own audio, although the resulting audio can be very good if adjusted correctly. I don't like the microphone, preferring a 'fist' type. The transmitter is rated at 5W PEP, but to me seemed too low powered for general stand-alone use, and it was too powerful to use as an exciter with my 100 W amplifier, although an attenuator would fix that. It's also a bit confusing that the microphone and headphone connections are on the unit, while control is always from the computer. I'd prefer all control to be in one place, and must say that I still prefer a conventional transceiver, but then maybe I'm old-fashioned.

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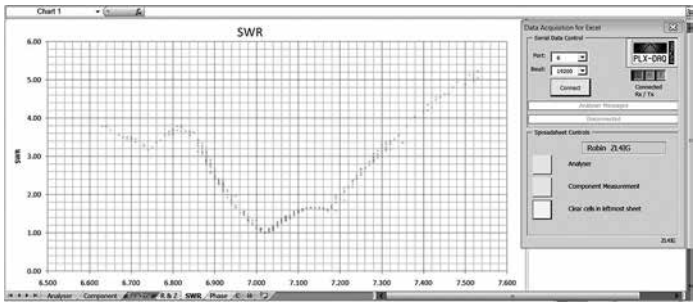


*Figure 2. Screen shot of MS Excel and PLX-DAQ serial communications, Active-X control screens measuring the SWR of the author's 80m/40m homebrew trap dipole.*

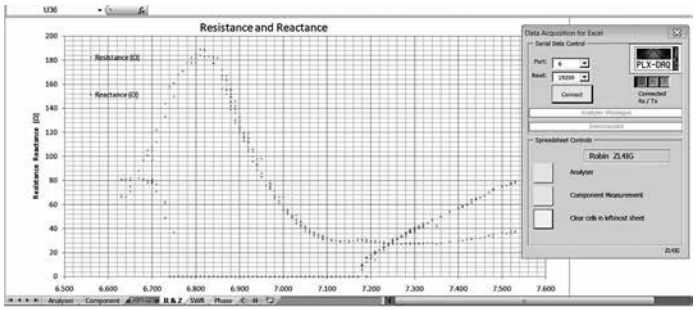


*Figure 3. Screen shot of MS Excel and PLX-DAQ serial communications Active-X control screens measuring the reactance and resistance of the author's 80m/40m homebrew trap dipole.*

to communicate with and it didn't take long to figure out some further hacks by carefully studying the existing code. Shortly my analyser was able to send a constant stream of comma-separated variable (CSV) format data to my PC. They could be cut easily and pasted into MS Excel to make graphs. Of course, I needed a terminal emulator for my PC to receive the data. On Jeff's recommendation I found that Termite (5) was as good as any other terminal emulator and it's free.

Jeff's code also had implemented the changes needed to convert the antenna analyser into an inductance and capacitance meter by checking the status of an existing resolution mode-switch at start-up. The VK5JST analyser, like most others of its class, isn't actually able to measure the sign of any reactance, so you do have to decide if you are measuring a capacitor or an inductor yourself; there are some things you can't fix with software. The measurements seem pretty accurate and at any rate are good enough for me.

Soon it irked me that I couldn't graph results in real time for I felt that it would be useful to plot results on the fly to give me a better feel for my antennas. Achieving this is not straightforward as I soon found out, as without some help from an Active-X control, which resides deep inside MS Windows, MS Excel won't talk to the real world in real time. There are a number of costly solutions to enable this, but eventually the Web yielded the freeware PLX-DAQ serial communications Active-X control (6), which allows up to 20 columns and an unlimited number of rows of data to be imported in real time. The Active-X control is accessed through a Visual Basic macro in MS Excel, which displays a control window on the spreadsheet and is straightforward to use. It is also painless to install.

There was a caveat in the PLX-DAQ ReadMe that I didn't quite understand, so an email to Martin Hebel of SelmaWare Solutions® who, I found, is also a university professor who coincidently sometimes teaches antenna theory, clarified that I was allowed to share my tinkering with the Visual Basic interface as long as any resulting code was named in a way to avoid confusion.

If I criticise PICAXE BASIC for encouraging spaghetti programming, then surely Visual Basic for Applications (VBA) that resides hidden in the back of every MS Office application (look under View/Macros in MS Excel to find it) is best described as delivering 'macaroni programming', for this seems to me to be the best way to describe object orientated language. The irony of juxtaposing stone-age PICAXE BASIC with 21st Century object orientated VBA wasn't wasted on me. Once you get used to the concept of object orientated language, you can sort of work out how VBA works by looking at existing code and if you get stuck there is any amount of assistance that can be found by resorting to Google searches. An introductory book from the library may be better still.

I hacked the MS Excel macros to read the mode settings of the analyser to automatically build correctly labelled graphs and plot the results in real time. Some more tinkering with the PICAXE code was needed so that the two devices could 'talk' to each other to manage this. If anyone is interested, I can email both the resulting PICAXE code and Excel workbook on request (7). Be warned that my code is not perfect, though it is reasonably well documented; however, I have got to the point where I want to use the analyser, not continually fine tune it.

My renewed interest in microcontrollers by now was piqued: although it was functional and easy to use, indeed, if pressed I could live with it. I felt that my future wasn't with PICAXE BASIC: a whole new world awaited me, if only I could find it. Trawling through the Web, I found Texas Instruments' MSP430 LaunchPad (8), which Texas Instruments will FedEx to your backdoor for just $US4.30 (don't you like it?!) all up once you supply your credit card details and promise not to use it to make a guided missile. Unless you can code in C/C+ and know how to deal with interrupts, flags, bit addressing and nitty gritty, expect a steep learning curve. It is in my future, but I don't expect any useful results anytime soon.

My attention moved to the VK5JST analyser measurement hardware. Using non-linear OA45 germanium diodes to rectify RF measurement voltages which are then linearised with an op-amp is okay, but these days there are some really impressive, high accuracy, linear RF voltage and power measuring chips from Analog Devices (9) that should do a much better job without costing an arm and a leg. A colour LCD graphing screen would be nice, too. The more I thought about it, the more digital techniques seemed to be where amateur radio is now at, to the point that I felt it was time to warm up the filaments in my old 1962 Hallicrafters SR-150 and have a CW, the ultimate digital mode, QSO at the bottom of 40 m, because, let's face it, with old valve rigs and their wide range Pi-network outputs, who cares what the SWR is anyway? βi

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# Annual General Meeting Minutes

*Solway Park Motor Lodge, Masterton.*
*Saturday 1st June 2013*

**1 Welcome**

Conference commenced at 8:30am and opened by Gary Daniell, Mayor of Masterton. President Vaughan Henderson ZL1TGC commenced the AGM at 9:05 with a welcome to the WIA representatives, Geoff Atkinson VL3TL and Peter Freeman VK3PF.

**2 Apologies**

*Branch:* Southland Br 37, South Otago Branch 35, North Canterbury Branch 68, Kawerau Branch 67, Western Suburbs Branch 03, Tauranga Emergency Communications Group (TECG) Br 88, Radio Electronics Group Br 89.

*Amateurs:* ZL2AZY, ZL1AVY, ZL1UD, ZL3GX, ZL2TGQ, ZL1BXA, ZL1WT, ZL1OS, ZL4QS, ZL3MJS, ZL3TVS, ZL1BBO, ZL1JAN, ZL3TNT, ZL3AI, ZL1PO, ZL3ADF, ZL4HU, ZL3IB, ZL4GJ, ZL4RC, ZL2HD, ZL2AH.

**3 Silent Keys; minute silence**

Special mention was made of Roy Symon ZL2KH and Kaye Stewart, XYL of Bob Stewart ZL2AMI

**4 Life Membership**

Was awarded to ZL2AZ Peter Lake. This nomination was received with applause by the AGM. Peter came forward to receive his award, and was accompanied by his wife Margaret. ZL1TGC thanked Lower Hutt and Titahi Bay Branches for nominating ZL2AZ.

**Confirmation Of Quorum**

Following the roll call a quorum was confirmed with 616 members represented.

**5 Report On Council Business**

Council meeting commenced at 10.30am Friday 31st May. Stuart Watchman, ZL2TW was nominated and elected as Vice President for the next two years.

ZL1TGC advised Council have formed a finance sub-committee who are tasked with reviewing all areas of high expenditure within the Association.

**6 Subscriptions 2014**

Subscriptions for 2014 will remain unchanged with the exception that the overseas members subscription will be increased to $125.00.

- Transmitting members $99.00 with a $10 rebate if paid by 30 November
- Family membership remains at $129 with a $10 rebate.
- Overseas members $125.00 with no rebate.

ZL1TGC advised the meeting that due to overseas travel requirements there may need to be a subscription increase for the 2015 year.

*Call Book* 2013 will be produced on CD Rom only.

**770cm Bandplan Review**

The Council initiated 70 cm bandplan review has reached the stage where a draft bandplan has been produced. Feedback from members of the review sub-committee has concluded that more engineering work is needed. Doug ZL2TAR from FMTAG has been asked to provide input on the engineering issues.

Council are seeking interested persons who can assist in a new web site design for the Association.

Phil Holliday ZL3PAH, Midlands Councillor, has prepared a strategic plan for the 'Future Direction in NZART'. More details of this will be presented later in the meeting.

ZL1TGC called for ideas/suggestions on the production of future *Call Books*. Most see an electronic version to be preferable and could be placed on the web. A member suggested that if *Call Book* is published in electronic format that branches may assist those amateurs who do not have internet access.

Members present at the meeting, believed Council should use the National System as a meeting alternative, rather than Skype, as many like to listen to the on air meeting.

Minutes 2012 AGM Moved ZL2LS, Seconded ZL2AJ **Carried**

**8 Annual Accounts**

Annual accounts – Evan Sayer. For the first time since the financial year of 1999, the Treasurer presented the Annual Financial Report recording a deficit. There were a series of events that when compounded contributed to the deficit of $26 574. These were:

- A full *Call Book* plus a CD Rom being produced.
- A membership drive which coincided with annual subscriptions, resulting in significant overtime for processing of this.
- Overseas travel expenditure of $17,344
- Finally, falling membership; in 2005 the Treasurer warned that when the membership dropped to 1800 members then the next round of major decisions about the way the Association works would need to be made.

Looking forward, Council has formed a finance sub-committee to carefully look at all areas of income and expenditure. We need to maintain or grow the current membership of 2000, which increased last year after the promotion.

Audit fees will increase dramatically in the near future due to a change in standards by Chartered Accountants. However with a change to the Association's Constitution to allow for an Annual Financial Review, rather than a full audit, this cost can be reduced.

Another change to the Constitution, will allow the Association to apply for charitable status. This would eliminate the tax costs of $2000 to $3000 annually.

Evan moved that his report be adopted Seconded by ZL3HB **Carried**

**Appointment of Association Auditor**

Evan moved the appointment of Parsons Roddick & Co as the Association Auditors for the Current Year. Seconded ZL1RGM Carried

**9 Officers' reports as published in *Break-In*.**

It was noted from the *Break-In* Editor's annual report that he wishes to stand down in the near future. It is not necessary that the Editor live in the Christchurch area.

The Reflector Moderator report also noted that he wished to step down. ZL2WAL Rob Wallace offered to take over this position.

All annual reports were adopted en masse by ZL2TLL, Seconded ZL2WAL **Carried**

**10 Young Amateur of the Year Award**

The Icom sponsored award presented by Sharon Dawson, was awarded to Aiden Barnsdale ZL3APB 15 years of age, from Christchurch Branch 05.

**11 Remits**

**Remit 1**

***Manawatu Branch 20 Constitutional***

Vote Count taken; 1219 Against, 411 For. Remit Lost

**12 Presentation of the ZL1HV Award**

John Wysocki ZL2TWS nominated by Upper Hutt Branch 63 and

Grahame Fraser ZL3SJ nominated by Christchurch West Branch 56 were the two recipients for this year's ZL1HV award; these were received with applause from the meeting.

**Rothschild Cup**

The Rothschild Cup, was presented to North Shore Branch again for the having a total of 11 successful examination passes in 2012. This is the 4th year in succession.

**13 Fixing of venue for 2014 Conference**

No offer came from the floor.

**14 Best Examination result – Youth**

The Nelson Sound sponsored award for Best Examination Result Youth (under 20), was awarded to Molly-Ellen O'Malley ZL3YL for achieving 56/60 in her exam. Molly received a UHF handheld.

**15 Certificate of Service Award**

Presented to ZL2HD for his 6 years of service to NZART as Central region Councillor. A representative of Branch 74 came forward to accept this certificate on behalf of John as he was not able to be present.

Meeting adjourned for lunch 12:30pm

Meeting resumed at 1:30pm

**16 General Business**

**100% Examination result**

The Nelson Branch 26 sponsored award for achieving 100% in an examination in the over 20 year old age group, for the year preceding conference, went to 5 recipients this year: Stuart Williamson ZL1SAR, Br 28, Eric Bretscher ZL4EB Br 37, Mike Cox ZL1GV Br 29, Steve Robertson ZL1AVS Br 29, Ian Graham ZL1IDG Br 29.

**Posthumous Award to ZL2KH**

A special posthumous presentation was awarded to Roy Symon ZL2KH, in recognition of his long service to NZART and unique sense of humour. Frank Hunt ZL2BR received this plaque, and will present it to Jill Symon, Roy's widow.

ZL2ADK and others were concerned that Council will arbitrarily fill the two vacancies within the Central Region Council, when perhaps a vote is more in order. ZL1TGC; those branches in the Central District will be advised. Council will come up with a cost effective solution as, we are trying to keep costs down.

David Morley ZL1DAM from Branch 86 advised, there will be no ZL1 QSL Bureau service in the Northern region in the near future, as they have no one willing to do the job, therefore are asking for assistance.

Ted Linney ZL2TB; February face to face minutes of Council do not appear on the web. ZL1TGC; These minutes appear on the Association web site, therefore it is important to have them informative and concise. This has not been done due to time constraints, however will be available in the near future. ZL1TGC apologized for the delay.

ZL2TB – 70 cm Band Plan Review has proceeded without terms of reference which is unusual, and extremely unreliable as a number of drafts were presented. Why is this? And what are the consequences of this omission.

ZL1TGC said he was satisfied with the process that was put in place, with the committee receiving 27 submissions.

ZL1PK – There was a terms of reference agreed to by the majority of the review group.

ZL2TB – the agreement to the TOR by the majority have never been published, why not? When and who agreed to them?

ZL1PK – Re publishing, it is only relevant to publish to the members of the group who are doing the work, and this is to whom it was published.

ZL2TB – believes people who present submissions are entitled to see them and to see the complaints by the significant number of amateurs who made them. Timelines and scope which are fundamentals of any committee are not apparent with this review.

ZL2AZ – commented on the 70 cm band plan suggestion that NZART follow the IARU R 3 band plan. This is not prudent as submissions are made by member societies triennially, therefore not up to date. They are also reviewed by people not necessarily expert in the matter.

ZL1TGC advised that sometime in the near future, a revised 70 cm band plan will be published, with a call for further comments and suggestions from amateurs.

ZL2TDD – directed at ZL1TGC the president. In reference to Info-line 39s, ZL1TGC changed the wording quoted by ZL2AMJ misleading members in doing so, why? ZL1TGC – responded; one change was the word 'request' to 'demand' this was the opinion of the President.

ZL2TDD – The second point was regarding copyright? ZL1TGC – the copyright issue, quote "I do not accept" unquote.

ZL2TDD suggests that ZL1TGC has defamed Fred. He asked what provision does ZL1TGC have for personal defamation against him and the Association because of this defamation.

ZL2TDD believes ZL1TGC has mislead the members and effectively lied to them because of these changes. Quote "You are very vulnerable to defamation action" unquote. ZL1TGC responded; "That is always a possibility". If defamation action is taken he will consult with Council and will respond accordingly.

ZL1TGC further advised, the claim for copyright on the examination material was not valid.

James ZL2ET – believed that an unbalanced view of the whole discussion had been presented. Asked if there would be an opportunity for ZL2AMJ to publish a rebuttal, to give his side of the story?

ZL1TGC – ZL2AMJ can use Info-line to rebut or counter what has been published, however he has not received any such request from ZL2AMJ.

ZL2BEF – Has any consideration been given to amateur involvement in the 100 year ANZAC commemoration? ZL1TGC – confirmed that NZART is working on plans to celebrate the occasion in conjunction with the WIA. More information will be available soon via *Break-In* and HQ Info-line.

ZL1TGC called upon Peter Freeman VK3PF (Editor of the WIA magazine Amateur Radio) from WIA to speak. Peter gave an inspiring presentation on SOTA, Summits On The Air. Peter advised that this is a UK amateur initiative where points are awarded for contacts made to defined registered summits or prominences. The VK3 area has embraced SOTA with a result that there is much portable activity occurring, especially on the 40 band.

**14 Stirrers Award**

Vice-President Stuart ZL2TW announced the winner of the Stirrer's Award which went to Mike Barnes ZL3TMB. Mike received the award for insisting that a vote count be held on the vote count remit.

ZL3QL expressed on behalf of those present, a sincere thank you to ZL1TGC for a well-run annual general meeting.

**AGM concluded at 3:30pm**

## Forthcoming articles

It is hoped to print the following articles in the next issue of *Break-In:*

- What the heck is a dongle ?
- EMC and Interference to Ham Radio Communications
- Converting and old transceiver power block into a 100W linear amplifier.
- Thermionic emission from filaments and cathodes.

***Plus your article when received.***

# NZART Conference 2013

## *1 & 2nd June, held at the Copthorne Hotel and Resort, Masterton.*

*The Annual NZART conference has been and gone for another year with a good turnout and the weather gods were very kind to us.*

Events started on Friday afternoon with conference registrations in the foyer of the Copthorne Hotel where attendees collected their swingers and grab bags before moving off to their accommodation or catch up with other attendees. I would like to thank Grant ZL1GSM, for obtaining a large number of the goodies in the grab bags and then he and Tony ZL1TLC, after driving down from Auckland, helped load all the grab bags with the goodies that they had bought down with them.

Raffles were also very popular and were sold out by Sunday lunchtime which helped offset the costs of running the event. A special thanks to Sharon Dawson from Icom for the donation of the major raffle prize of the Icom IC-7200 HF radio which proved to be very popular and the raffles for this radio were sold out by Saturday lunchtime.

The evening informal get together was held in the bar at the Copthorne where everyone had a chance to catch up before the next day's formal proceedings.

The conference AGM started with the official opening by the Masterton mayor, the Rt Hon Garry Daniell followed by the official photo on the front steps of the venue before getting down to the AGM business. A special presentation of Honorary Life membership was made to Peter Lake, ZL2AZ for services to Amateur radio and to NZART.

After the AGM was over, we decided to draw the major raffle prize of the Icom IC-7200 as some attendees had come for the AGM only and would save us having to get the radio to them if they happen to win. As it worked out the winning ticket was won by one of the Conference committee members, Neil Richardson ZL2UN. The AREC AGM followed before the pre-dinner drinks then we moved into the dining room for our evening meal. Entertainment during the meal was by a local entertainer, Ricky Long with a story of how he started in the entertainment business in his early days with a ukulele.

*Attendees at the NZART Conference 2103.*

*Sharon ZL1TJU and Edward ZL2DV at the Icom display.*

*Sharon Dawson from Icom presented Neil Richardson ZL2UN with the Icom IC-7200.*

Sunday morning started early for those keen members looking for a bargin at the car boot sale before the AGM's for AMSAT, OTC, SPAM and WARO started.

The forums followed with talks by Don Wallace on Regulatory Topics, Mark Gooding on Dsta , Gary Bold on Writing Articles for *Break-In*, Frank Hunt on Contesting, Max Wheatley on APRS, plus AREC forums run by Rex Aubrey from Police IT and John Yaldwyn on AREC/SAR equipment.

The day's events were followed with pre-dinner drinks then the evening buffet meal in the dining room. Once again we were entertained with one of Jim Meachen's classic quiz sessions to keep the brains ticking over.

This was followed by the remaining raffle draws and thank yous to various people including Dave Scott for supplying the sound gear for the weekend and Topsy Scott for helping the conference committee get underway with the organising plus helping with the thank you presentations to the quest speakers. (we couldn't have done it without her advice and suggestions).

*President Vaughan Henderson presents Peter Lake ZL2AZ with Life Membership of NZART.*

During the meal, it was announced that we had a new ham who had sat and passed their exam on Saturday afternoon and was already allocated her new call-sign. Congratulations to Sharon Dawson from Icom with the call-sign of ZL1TJU which happens to be her late father Dave Dawson's call-sign

A thank you to all that assisted the conference committee in helping make the conference a successful one and look forward to seeing you all at the next conference; venue yet to be confirmed.

*David Bray ZL2BA*
*Conference Chairman.*

# Monitoring Service

Monitoring Service Co-ordinator: John Martin ZL1GWE
<john.martin@nz1.ibm.com>

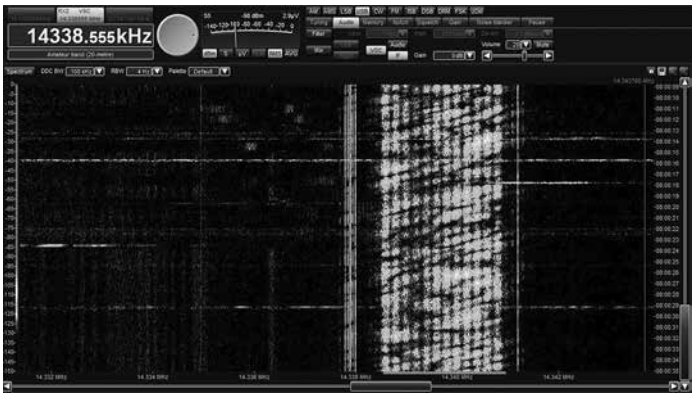
Greetings to all, including Short Wave Listeners and contributors. Here we are in the depths of the Kiwi Winter; despite this the intruders continue to romp on in on a daily basis. Regularly we see and hear the HF Man Packs; Military signals from the Russians, including FSK (RTTY) signals and the Over the Horizon Radar (OTHR), which appears to dominate the 20 and 15 m bands. The interesting thing for years has been the suspicion that the Australian OTHR systems pointing towards the North West and North East towards Indonesia should theoretically never be heard here in New Zealand. This is definitely not the case; increasingly the Australian OTHR has been recognised as having variable Pulses per Second rates and sometimes accompanied with the characteristic centre pip at the centre of the transmissions. Observers from various countries within Region 3 have come to recognise the spot light search patterns associated looking for boat people often within the Amateur Radio Bands and outside. However, the usual remark is that there are many nations using JORN type (Jindalee Operational Radar Network) like technology, which is true. The Australian system protects the nation's borders and is used for surveillance purposes. The characteristic centre blip or tone during transmissions, however, it is easy enough to turn off these classic characteristic patterns using software driven transmitters. This suspicion of course, which raises eyebrows over in Australia, when it is suggested that the military authorities are transmitting in the Amateur Radio bands. This is where collaboration with other nations is required to validate findings and never to make an official report without providing sufficient, collaborating evidence. Region 1 has previously had reports of Australian JORN validated by the German PTT authorities through Direction Finding (DF) measurements. So what, can we observe about the OTHR signals, plenty:

a) The direction signal emanates from;
b) the Pulses per Second or whether they vary;
c) the strength of the incoming signals;
d) the length of the transmission bursts, and the associated gap between transmissions;
e) the date/time of the transmissions;
f) the modulation type normally FMCW types;
g) the width of the transmission bursts in kHz by ear or by sight (SDR);
h) any anomalies or characteristics i.e. centre blip or non-existent;
i) the strength of the transmissions;
j) whether there are multiple signals from the same source, using a searchlight pattern within or outside the Amateur Bands;
k) OTHRs are normally accompanied by Ionosondes, which can easily be recognised with an SDR.

Apart from these, the majority of intruder signals give very little away in terms of identifying them, which depend on strong collaboration with other observers and associated regions reports. The availability of remote receivers for cross collaboration purposes and for taking referential bearings, it is essential to build substantive information, especially when observers are light on the ground. All gathering of information, can take time, a lot of effort and with no guarantee that sufficient evidence can be built up or whether the information can be fully substantiated. We have our deluge of intruders on a daily basis, and it is in our own backyard, so we don't need to go far to find them, especially on the High Frequency bands.

I asked last time, what surprises would occur in May and June; well Radio Free Asia (RFA) was detected on a number of days, unannounced, but it quickly disappeared after the Chinese Firedragon took its toll on their transmissions.

We often receive visitations from Russian military signals; a common one is the AT3004D modem, which consists of 12 frequencies and a guard frequency, which is normally 3.3.kHz above the centre of the main




transmission. All transmissions are encrypted. A diagram below illustrates it transmission pattern using an SDR:

Incidentally the ITU emission for this type of signal is M7D. M for Modulated in position and phase; Two or more channels containing quantised or digital information and Data transmission, telemetry, telecommand.

**Intruder System Observer League Table 2013 (up to end of June 2013**

| Contributor Name/ Call-sign | Number of verified reports |
|---|---|
| John ZL1GWE | 359 |
| Bob ZL1BAD | 354 |
| Stephen ZL1TPH | 49 |
| Rex ZL4IV | 5 |
| Bert ZL1VT | 3 |
| Gary ZL2iFB | 2 |
| Tony ZL1TTG | 1 |
| Ken ZL4NR | 1 |
| Cliff ZL4AS | 1 |
| Others VR2BG/P | 2 |

Thank you for all contributors. If you have a signal you cannot identify, please provide an audio sample, and we will attempt to recognise it for you. Please report intruders to: <MS@NZART.org.nz> or <MS2@NZART.org.nz> or <IntruderWatch@GoogleGroups.com> or to your favourite DX Cluster. Please include if possible, the frequency, time in GMT or UTC, mode, strength and direction (if available). A real bonus would be an audio sample, long enough for identification purposes and any observations you have. If you have any questions, do not hesitate to contact me directly.

*John ZL1GWE*

# Letters To The Editor

*All Letters to the Editor must be signed and include the author's full name, call-sign, (if applicable) and address. Opinions expressed here are those of the author and do not necessarily reflect official NZART policy.*

**Letters to the Editor: guidelines to contributors**

*Letters to the Editor should be concerned with Amateur Radio and normally not exceed 400 words.* Break-In *follow the guidelines given on page 4-3 of the 2002-2003* Call-book *"Standards of language, and topics best avoided". Accordingly sex, race, religion and politics are not acceptable subject matter.*

**Wanganui Amateur Radio Junk Sale 2013**

Sir,

On behalf of the members of branch 48 NZART and the Wanganui Waimarie Riverboat Restoration Trust,we would like to convey our sincere thanks to all who helped make this sale once again possible.

A special vote of thanks to all those folk who did travel some distances to attend the sale, or without your support this sale would not have be possible. This was our first sale for a number of years and was a joint venture between the two organisations listed above, and proved to be a successful and enjoyable day.

To the many folk who have contacted us post sale with favorable comments, it is very much appreciated.

The question was asked at the conclusion of the sale; "Do we do this again next year ? ", the verdict was unanimous, so God willing folks same time, same place 2014, again sincere thanks to all involved, so lads start sorting out that Jun… oh I mean pre-loved used equipment and help build on this year's results.

73s *Graham and Val Hawtree*
*ZL2AHR & ZL2FO*
*Licensed Auctioneer*

# The Morseman

Gary Bold ZL1AN
<morseman@nzart.org.nz>



### Zapping the Computer Garbage

If you don't want to read about computers, skip this section. If you use one on the web, maybe you should.

As time goes by, the Windows XP computer on which I'm writing this takes progressively longer to boot. Applications load more sluggishly, and the disk light flickers suspiciously while they do. Strange hesitations occur during operation. It is time to clean things up.

Once this meant loading the computer into the car and visiting an expert. Now, unless there's a hardware problem, the expert can visit you over broadband internet. In case some of you don't know this, here's what I do.

I email my expert and arrange a consultation. At an agreed time, he phones me. We exchange information that allows him to connect remotely to my computer, and now we can both see my screen. .

I have a list of prepared questions. (Why can't I delete this program? What is this strange icon which has appeared in my toolbar?) He takes over the mouse pointer, transfers a diagnostic program from his machine to mine, and fires it up.

For the next 30 minutes, I watch him examine and disinfect the bowels of my computer, while he explains over the phone what he's doing, and why. He finds files and hidden applications which should not be there and deletes them. (How did they get in? I run a top-rated, paid, anti-virus program, but malware still creeps past it.) Finally, he runs another program which disinfects, purges and compresses the registry. This takes quite a while, but is particularly important if, like me, you've installed and subsequently deleted a lot of software. After 30 minutes or so, he's done. He deletes his software from my machine, and hangs up. Now my computer runs much better, and I wait for the bill.

Some of you will be expert enough to clean up your computers yourself, and there's quite a lot of free software out there to help you do this. But if you're not an expert, bear in mind Jerry Pournelle's dictum; "If you don't know what you're doing, deal only with those who do"

### Replacing the battery

A week ago, I turned on the switched-mode power supply for my TS-50s, and the radio's display lit up immediately, without waiting for me to press the on-switch. All my customized menu settings had vanished. The manual told me that this meant that the backup battery had failed.

The battery has a Kenwood part number, and is supplied in a nice insulated holder with attached solder tags which hold it in place, easily visible when the bottom case half is removed. The nominal cell voltage is 3V, but mine had dropped to about 0.87V. But it's just a standard 2430 Lithium coin cell, so instead of purchasing a replacement from Kenwood with tags and holder, you can fit one of several electrically similar cells if you remove the original and mount the replacement on flying leads. This website tells you how to do it[1]. I bought a similar coin cell from the local jeweller; they're also used in watches, and soldered it in. A Kenwood service bulletin now advises:

"If the power is not cycled ON then OFF, the microprocessor will immediately begin drawing approximately 1 mA from the Lithium battery, resulting in poor battery life."

So I did this, reloaded the memories, and thought I'd finished. But no, after a couple of days, the dead-battery symptoms returned! Measurement in situ revealed that the battery voltage had again dropped to 0.87V. The battery technical data sheet says that it should have lasted over 200 hours with a current drain of 1 mA, so something was fishy, the drain must have been a lot higher than this.

Brian, ZL1BSW has three of these radios, so I consulted him. He said that this was exactly what he'd done on all three, and he'd had no further problems.

I removed the discharged battery and pondered. Next morning, I checked its voltage again, and found it had risen back to 2.87V. Very suspicious. Could it be that it had still, even after the on/off recycling, experienced an abnormally large current drain which had either discharged it, or greatly increased its internal resistance? I consulted the web again, and found another post, buried deep in a plethora of TS50 user comments:

"After replacing the battery it's essential to do a microprocessor reset or the battery dies very quickly."

I put the same battery back, and performed the recommended microprocessor reset. This just involves pressing the "A=B" menu button while switching on. Now, a couple of weeks later, the memories are still there, and the battery voltage has even risen to 2.99V, implying that the current drain has dropped back to the low value (several μA?) required to keep the memories alive. Time will tell. Has anyone any comments?

### The return of the Doktor

Jim, G3JQC emailed: "I've been (re)reading Bill Pierpont's *'The Art & Skill of Radio-Telegraphy'*[2], in yet another attempt to improve my CW from abysmal to at least competent.

"I'm using a straight key at present, and would like to be able to evaluate my sending. Pierpont mentions your program DK.BAS, but I can't find it on your web page. Is it still available? "

DK.BAS was written in QuickBasic, and contained the first incarnation of my Morse evaluation algorithm. In 2006 I re-coded it in Delphi, and posted it on my webpage as 'Doktor'. It read Morse by sensing the open/closed state of a Morse key connected to two pins of a parallel port, playing an audio monitor tone, then showed a graph of key-closures against time, and gave a detailed analysis of your Morse.

I removed it from my website because it became a fossil. After about 2005 only USB ports were supported by new computers. USB devices are intelligent, and talk to the host via a protocol which even brilliant software engineers consider daunting.[3] You can't just read a logic state change between two pins as you.can with the parallel port.

I emailed the code to Jim anyway, because he still had an old Sony laptop which did have a parallel port, and he emailed back; "I took your program to the Salop Amateur Radio Society club night yesterday. Went off into a corner to set-up my laptop, and started to demonstrate it to my (two) fellow CW ops. But soon the rest of the group migrated to our corner to see what was going on.

"It created a great deal of interest, even amongst those (the majority) who previously had shown no interest at all in CW. I've a feeling many of them would have been happy to try it in private, even the really OT who said 'I haven't touched a morse key since 1967'! They insisted that I take the laptop to next week's meeting, so they could have another go. One member said, 'I could play with this all night'"

User Reactions. This was intriguing, so I asked Jim to report back after the next meeting. He emailed again: "This time frustration started setting in. There was a big discussion about what all the numbers really meant. Having sorted that out (eventually) to everyone's satisfaction, I think (I'm not a patient person), the question was raised "Is it possible for anyone to send perfectly with a straight key?" My answer to that was probably not, but since our sending was nowhere near perfect, the question was pretty irrelevant!

"Having slept on it, I concluded that people resented a program being 'critical' of their sending. Maybe it was because it was in front of their peers, or maybe the frustration of not being able to understand how to 'break' old habits.

"I did find the analysis of my own sending quite revealing, in particular I shorten the last 'dit' of characters, but lengthen the last 'dah'. This, in spite of listening to 'perfect' morse for the past few months. Maybe I should just say 'sod-it' and get on the air and actually try to make a few contacts!"

I also encountered this negative reaction. Years ago when I took it to club nights, CW ops were also keen to try it out, but usually became rapidly miffed if it was critical of their fists, which it usually was. Sometimes they refused to believe that their Morse could be as bad as the software said it was, even with the evidence shown graphically before them. Hadn't they been using CW for many years?

What do the Numbers Mean? The operating window of Doktor is shown

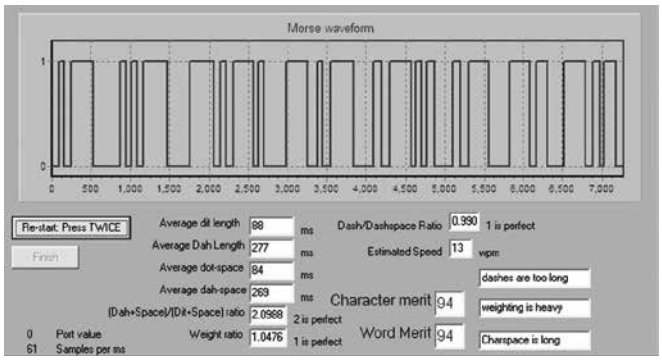



*Figure 1. The operating window of "Doktor".*

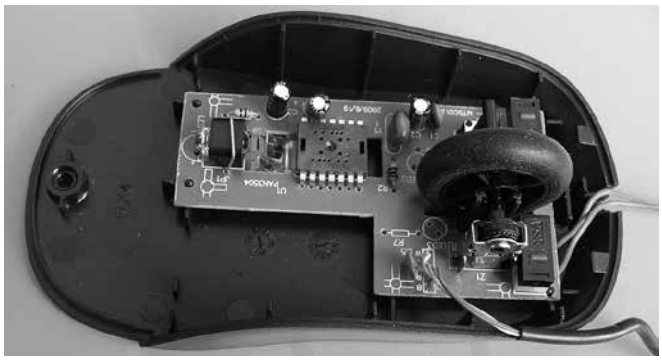


*Figure 2. Connecting a Morse key to the mouse.*

in figure 1. The plot of key closures is shown at top, below this a series of boxes giving diagnostic information. You can see that the word sent was "Auckland". The top 4 boxes in the left-hand column show the average values, in ms, of dit and dah marks and spaces. From these, the other 6 diagnostic parameters are calculated. The program digests these, and reports that the estimated speed was 13 wpm, the dashes and character spaces are long (but only slightly), and the weighting is (again slightly) heavy. Finally, at bottom right, it gives a "Character figure of merit" out of 100, which is computed from all characters treated as isolated letters, and a "Word merit", which includes analysis of the character spaces as well. The algorithms used take into account all of these parameters, and are quite complicated. As far as I know, no other software attempts this. A more detailed explanation is given in the Help file.

The figures of merit shown are very good. Even experienced CW ops usually initially achieve marks in the 50's or 60's, but like Jim, see immediately from the plot what they're doing wrong. On subsequent trials, concentrating and using this visual feedback they often do much better.

But all this is rather pointless if the software won't run on today's computers which lack a parallel port.

Aha! Morse with the Mouse! Then I had a brilliant thought I should have thunk years ago. All modern computers support a USB mouse. All mice have buttons. Button states are read by software in the mouse and transmitted to the host computer. Why not use a mouse button as a Morse key, and let the mouse handle the communication protocol? Does Delphi support this?

It found that it does, so I re-wrote my software to interrogate the right-hand mouse button state instead of the parallel port pins. This worked immediately, and Doktor could now read Morse sent from the mouse! By the time you read this, Doktor version 2, which supports mouse-sent Morse will be on my web-page[4]. Even better, you can check your Morse even if you don't have a Morse key!

However, a mouse button is a pretty poor key, since it lacks the tactile feel and solid knob of a real one. So I took one of my mice apart (usually a single screw on the bottom), soldered two wires to the contacts of the right-hand mouse switch, and connected these to a real Morse key. Figure 2 shows the switch and wires, which exit from the same hole as the standard cable. Now the new software performs just like the old version.

But with one downside. Early PCs included a system speaker, which my software used to provide a side-tone during keying. When sound-cards were introduced, this speaker vanished, so modern computers are silent while the mouse (or key) is pressed. This is unfortunate, since there's no audio feedback. Is it possible to play a WAV file of a tone through the soundcard, and mute it while the key is up? I am investigating this. If you know how to do it, let me know?

### Last Month's Problem

What do the markings on the SWR meter shown in figure 3 mean?

The most detailed answers came from Basil, ZL1TOW, Robert ZL-2BAK, Ron, ZL1AI and Dave G3UUR. Dave wrote: "When I first saw the photo, I thought it was missing one needle, until I noticed there were two shadows below what appeared to be a single needle and realized that, indeed, there really were two.

"Presumably, one needle (from the right-hand movement) indicates the forward voltage and the other reads the difference between the forward and reverse voltages so that they cross on the 1:1 SWR line up the middle of the scale when both meter movements are indicating forward power into a perfect match.

Then, as the SWR increases, the difference needle deflection drops and indicates the SWR where the needles cross on the grid to the right of the central line. Curves for various SWR values are shown in that grid, as well as curves for forward power. The curves running to the right from the central vertical power scale and the SWR curves running more or less vertically show the net forward power and SWR where the needles cross. If the forward power is 1.2 kW, the right-hand needle must be nearly vertical and when the SWR is 3:1 they cross on the 900 W power curve right on the edge of the grid where the 3:1 SWR curve sweeps up and to the right before it ends abruptly."

This is more or less what all concluded. Pretty astute detective work! Robert even included a schematic showing how the required circuitry could be implemented with voltage-follower op-amps, but there's no room for it.

### This Month's Problem

Kelvin ZL3KB asked this:

"Many meters from the 40's era have a marking showing "F.G.X.4" or similar on their faces. Do you have any idea what this means?"

The meter face is shown in figure 4. I immediately realized that I had used a similar meter in a power supply I'd built 30 years ago. Sure enough, it has the same inscription, which I had never really noticed before. What does it mean?

### References


1 Replacing TS50s battery. < http://darrelltech.com/TS50/index.html>
2 Bill Pierpont's book <http://www.tasrt.ca/bookmain.html>
3 USB overview <http://www.ganssle.com/articles/usb.htm>
4 My web-page is <http://www.qsl.net/zl1an/index.html>

*Figure 3. Face of unusual SWR meter.*

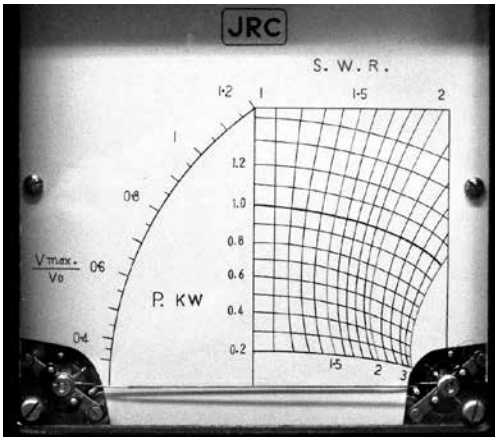



*Figure 4. Face of meter with mysterious marking*

# Longer Wavelengths

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### Spain joins 630 m

The Unión de Radioaficionados Españoles (URE) advises that Spanish amateurs have been authorized to use a new segment on the 160 metre band on secondary basis, 1810-1830 kHz, beside the primary allocation 1830-1850 kHz. They are also allowed to use the band 472-479 kHz on secondary basis. The band has been authorized since 10 May 2013 with 1 W EIRP allowed.

### RTL-SDR experiments

In the last Longer Wavelengths column I described my initial experiments with the popular DVB-T Ezcap® receiver USB dongle based around the Realtek RTL2832U demodulator used in "direct sampling" mode. By connecting a wire to one of the demodulator pins I managed reception of 2YA on 567kHz, but by transformer-coupling my active antenna output to pins 1 and 2 of the demodulator chip signal strength improved significantly to the point where even the Russian Alpha navigational stations at 11.9 kHz, 12.6 kHz, and 14.8 kHz could be seen on a frequency spectrum display.

There are a number of receiving applications that can communicate with the RTL2832U, SDR# and HDSDR being two I have used with my Ezcap dongle. Both of these programs are quite sophisticated and are reasonably intuitive to use. SDR# is "open source", meaning the program source code is available for others to study and experiment with. Unfortunately (from my perspective) it is written in C# (Microsoft's latest programming language, essentially an updated version of their old Visual Basic) and of course requires the latest versions of their compiler to be able to compile the code to an executable.

I understand SDR# can also be compiled and built under Linux, using Mono and Monodevelop. This is the Linux version of Microsoft's .NET framework. But I don't have Linux installed (yet) so have not tried this out.

So I thought I would have a go at writing my own software defined radio (SDR) receiving program. Fortunately, all of the essential source code for communicating with the RTL2832U demodulator and associated tuners is available on the Osmocom web sites [1]. And happily, it is written in plain old C which is still the "universal" computer programming language.

The interesting thing is that this source code was derived partly from information released by Realtek and partly from "reverse engineering". The Realtek RTL2832U has an analogue-to-digital (A-D) converter, a DVB-T demodulator, and a USB 2.0 device for communication with a PC. I understand that the RTL2832 demodulates DVB-T transmissions and sends the demodulated output via the USB as an MPEG2 stream. It seems that DAB and FM demodulation is done in software outside the dongle. Although Realtek made only limited information about the RTL2832 available to some software developers nevertheless it was discovered that the raw data samples from the A-D converter could be sent directly via the USB, by-passing the demodulator. The raw data samples were 8-bit in-phase (I) and quadrature (Q) pairs. Other commands were found that controlled the other functions such agc, IF gain, sample rate, IF centre frequency etc.

Initially source code for communicating with the RTL2832 and the various tuners (Elonics E4000, Fitipower FC0013 etc) was written using the "libusb" library to communicate with the device [2]. Libusb is an open source driver that allows applications to access USB devices. Later versions of this source code wrapped the libusb code into the "librtlsdr" functions, making the code easier to use. The librtlsdr source code was then used to make a dynamic link library called "rtlsdr.dll", a binary file containing all of the functions necessary to talk to the dongle, including all of the various tuners (all of which use different commands).

To use this DLL all one has to do is include it in the same path as the main application (eg SDR#) and call the functions from the program. This means the main application code does not need to include all of the source code, making it tidier and easier to read and understand.

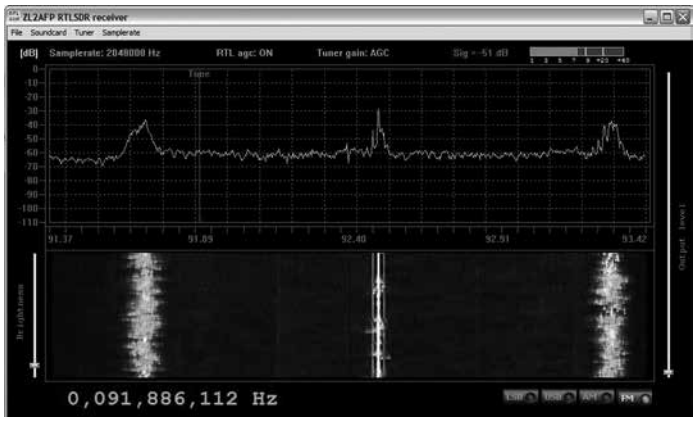


*Figure 1. SDR program.*

The programs that are available on the Osmocom web site write the output of the RTL buffers to file, demodulated or otherwise left as "raw" 8-bit sample pairs. All of the functionality is there in these programs, but it is written in an easy style without bells and whistles to obscure the essential DSP stuff. As such these programs will compile without requiring any changes on either Windows or Linux operating systems. Writing demodulated samples to a file is not really all that useful for practical reception of real time signals so instead it is necessary to write the output to a soundcard.

The source code available on the Osmocom site relies on the librtlsdr library which comes as part of the rtl-sdr codebase. This codebase contains both the library itself and also a number of command line tools such as "rtl_test", "rtl_sdr", "rtl_tcp", "rtl_adsb", and "rtl_fm". These command line tools use the library to test for the existence of RTL2832 devices and to perform basic data transfer functions to and from the device.

The rtl_fm code is a basic FM receiver program that operates from the command line. There is also the rtl_sdr program that will output the raw I-Q data to a file, and rtl_adsb, a simple ADS-B decoder.

For example, the following command will do reception of commercial FM stations, with output piped to a command line audio player (aplay) so that you can listen to the station in near enough to real time.

```
rtl_fm -f 96.3e6 -W -s 200000 -r 48000 - | aplay -r 48k -f S16_LE
```

Not very pretty or convenient! So I wrote a little program that added interactive controls and a graphical user interface (GUI). Audio output was via the open-source Portaudio library. This required only a couple of lines of code, although the way I did it (ie the easy way!) means there is a one second latency between input and audio output, which is not nearly as awkward for tuning around as I thought it would be.

Being a USB device, the dongle requires the libusb driver to be installed in the correct manner, in this case a program called "Zadig" was used (part of the SDR# installation package), but there are plenty of others (for example in reference [2]).

Figure 1 shows a screen shot of the program, showing three FM broadcast stations received using a short length of wire inside the shack. The upper screen is an instantaneous spectrum, covering a 2 MHz range, and the bottom screen is a waterfall of the same. The GUI is largely pinched from an audio filter program I write a while ago, so it might look familiar. It is not very elegant, but it works tolerably well. Tuning is by either dragging the upper screen with the mouse or by clicking on the numbers at the bottom of the screen. Eventually I will include the "direct sampling" mode and bypass the tuner altogether. Perhaps by the next Longer Wavelengths issue!

### ZL1ZLD joins the 630 m net

The 630 m net operates weekly with the liaison net on 3666 kHz, starting at 8:30 pm. Transmissions are on 473.1 kHz usually beginning at 8.40 pm with 5 minutes allocated to each participant. The net normally consists of ZL1QM, ZL1EE (ZL1BPU), ZL2T (ZL2CA), ZL3EE (ZL3JE), and ZL4MD transmitting. My transmitting setup is out of action at the moment so I am a listening bystander. Regular listeners include ZL2MS. The

# Rubber duck antennas; a comparison

*by Tony Allen EI4DIB*

*(Reprinted from Echo Ireland, March 2013)*

*Have you ever wondered about the rubber duck antenna that came with your very expensive handheld.*

Well, I decided to have a look at some of my rubber duck antennas to see which gave the best SWR and hopefully the best performance. The test was carried out using 5W on 2 m (145.400 MHz) and 70 cm (433.400 MHz). βi

| Brand / type | Base connector | Length (cm) | SWR 2 m | SWR 70 cm |
|---|---|---|---|---|
| Telescopic dual band | BNC | 87 | 1.3 | 1.3 |
| ¼ Wave 2m | BNC | 45 | 1.1 | |
| Dual band long | SMA | 40 | 1.1 | 1.1 |
| Nagoya NA-771 | BNC | 40 | 1.1 | 2.2 |
| ICOM FAPA-1443B | BNC | 20 | 1.8 | 2.1 |
| Dual band short | SMA | 19 | 2.1 | 2.0 |
| Dual band short | BNC | 19 | 3.0 | 1.4 |
| Kenwood | SMA | 16 | 3.5 | 1.9 |

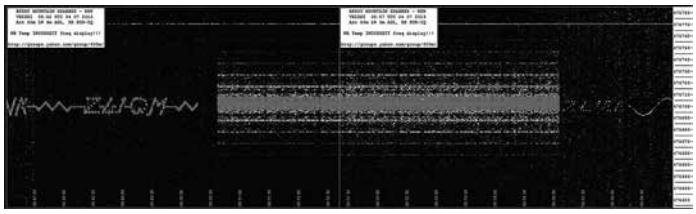

*Figure 2. ZL1ZLD monster signal in new South Wales.*

net of 4 July was joined by ZL1ZLD, the radio station at Musick Point, running 600 watts into a top-loaded vertical about 5 m high, with a 100 m wire for top loading and a very good ground mat.

Signal strengths at my QTH in Wellington are typically no better than about –105dB (arbitrary reference), with background noise usually below the lowest range of my Wandel & Goltermann Selective Level Meter (I can't measure below -112dB). However, ZL1ZLD was easily the strongest distant signal I have received here, with signal strength of around –88 dB. This needs to be compared with ZL2T's signal (ZL2CA, also in Wellington) which is usually at –70 dB. The 18 dB difference is equivalent to a 63-fold change in received power. The transmitter at ZL2T delivers about 100 W into an approximately 12m top-loaded vertical, with a reasonable ground mat. The power of 600 W compared with 100 W accounts for 8 dB of the additional signal. But the distance loss, assuming a trip to the ionosphere and back of at least 1000 km in the case of ZL1ZLD, (whereas ZL2T is only some 10 km away, with received signal being entirely direct wave) will be around 40 dB weaker assuming 6 dB attenuation per doubling of distance.

So ZL1ZLD should be some 32 dB weaker than ZL2T (whereas it is only 18 dB weaker). It has to be concluded that the 14 dB difference is due to the excellent ground system at Musick Point Radio Station. It would be interesting to know what the antenna-to-ground resistance is at ZL1ZLD, because if this is lower than that at ZL2T then more current is able to flow in the antenna and hence more radiated signal (the radiated power scales as the square of the current so big gains are possible by reducing overall loop resistance. At 5 m, the vertical is about the same height as mine, but my ground system is not wonderful and there is not a lot of top loading, so current flow in the antenna is only an amp or so.

It might be that on this occasion skywave propagation between ZL1ZLD and Wellington was exceptional, but ZL1QM and ZL1EE are not vastly distant from Musick Point and their signals were at their typical strengths, so it is unlikely that the strong received signal from ZL1ZLD was due to unusual propagation. As further evidence that propagation was not a major factor, a snapshot of the VK2DDI grabber in New South Wales shows ZL1QM and ZL1EE either side of the ZL1ZLD rock-crusher signal. The keying sidebands are visible out to many orders. Proof enough that ZL1ZLD has a seriously good antenna-earth system (although lots of power helps too!)

**References**


1 <http://cgit.osmocom.org/rtl-sdr/commit/src>

2 <http://libusb-win32.sourceforge.net>


## NZART Radio Science Education Trust

## Application for Grant-in-Aid

Applications are invited from secondary school science teachers and other training providers for Grants-in-Aid from the NZART Radioscience Education Trust to promote the development of projects in the general areas of radio and/or electronics. It is anticipated that these projects will lead to entries in the local area Science & Technology Fair. Grants will not normally exceed $250.00

Applications should normally be received no later than 30th May of the year of application. Application forms maybe obtained from; The Trustees, NZART Radioscience Education Trust, PO Box 1733, Christchurch 8140, or from <trustee@nzart.org.nz>. Applications should be endorsed by the Head of Science or, for other organisations, the President/Chairpserson.

## NZART Services and Bookshop

| | Price each | Non-Member |
|---|---|---|
| Additional copies of *Break-In* | $7.50 | $10.00 |
| Amateur Radio in NZ – The New Rules Explained | $10.00 | $15.00 |
| Amateur Radio Logbook | $10.00 | $15.00 |
| Basic Radio Training Manual 5th Edition (spiral bound) | $35.00 | $40.00 |
| Call Book 2012/2013 | $25.00 | $40.00 |
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| Log Sheets (per 10) | $2.00 | $5.00 |
| NZART Examination Questions; Bound copy | $25.00 | $35.00 |
| Examination set of 13 DVD's Training Material | $50.00 | $50.00 |
| NZART Badge – Call-Sign | $10.00 | N/A |
| NZART Badge – Life Member of Branch | $15.00 | N/A |
| NZART Badge – OTC Blue | $10.00 | N/A |
| NZART Badge – Plain | $5.00 | N/A |
| NZART Name Badge – Plastic Coated | $15.00 | |

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T = $99/F = $129/O = $125 Air/O= $100 surface/S = $45

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**Examination Application Fee = $5**

| | |
|---|---|
| New/Lapsed Call-Sign application | $95.00 |
| Secondary/One Letter Call-Sign application | $50.00 |
| Change of Call-Sign | $50.00 |
| Replacement Certificate (hard copy) | $15.00 |

# VHF Scene

Simon Watt-Wyness ZL1SWW
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Well we've passed the shortest day and it's now all looking up to heading in the right direction towards the spring / summer months, bring it on! For us in the Upper North island, we'll be starting to dust off or repair / build our 6 metre Yagis in preparation when our analogue TV goes off in December.

It only seems like yesterday since I compiled the last VHF Scene, this one has come up at me in a big rush. Too many work commitments have had me seeing too many late nights and not enough hamming and thinking about columns!

### 6 metres

In early June, there has been a bit of activity to VK along with spotting of the ZL TV video and beacons. Contacts into VK2, 3,4 & 7 have been had by ZL1RS, ZL4LV &ZL3NW.

Rod ZL3NW comments "On the 12th of April I spotted Lance W7GJ was calling CQ on 50.190 JT65A EME so I gave him a call even though the moon was elevated above my main antenna lobe. I had no problem completing a contact. I had EME contacts with Ian G5WQ on the 13th and 14th for the benefit of Roger ZL3THQ who was testing out his receiving set up for EME. After the contact with Ian on the 14th I was still beaming out to the west and came across Fred KH7Y on back scatter. He had a very strong signal when beaming direct and we exchanged 599 reports. Further EME contacts were completed on the 19th with Lance W7GJ and Mario K2ZD but on the 24th I had a new and welcome EME contact with Pop YU7EF. I also completed with Bert S57RR after Pop.

The 28th of April was a big day for the South Island of ZL as this was when the analogue TV was turned off. Of particular interest was having the VHF TV channels going QRT. The noise floor on 6 m reduced dramatically and will be a real boost to weak signal reception. On the negative side the Channel One TV from the South Island is lost as a beacon.

From mid May onwards brought a few winter Sporadic E openings across the Tasman to VK2, 3, 4 and 7 Good to catch up with some of our neighbours in VK.

The 8th of June was an interesting day and unfortunately I was away from the radio for a couple of hours but during this time several stations in the USA were hearing some of the remaining ZL channel 1 TV video. Bob K6QXY was copied by Harry ZL2ADU at R5 S6 on SSB but was unable to reply as he has no 6 m permit and is still in a TV coverage area. The next day I was all ears and I did just manage to have a contact with Jay K0GU at RST 429 although he did peak up to 529 at times. The 11th and 13th June brought Sporadic E openings to VK2, 3 & 7. During June there was some 182.5 mm of rain and with the ground saturated ground reflections were excellent for EME (ground gain). EME contacts were made with Ray WA4NJP, Tim N3XX. and Bert S57RR."

Tim VK4TIM (ex ZL1TN) emails me to say that 'No low band TV left in Queensland, only two low band TXs are Sydney and Melbourne. Brisbane is digital only now, no low band, all high VHF or UHF'. He is also keen to see when the AKL 6 m beacon will be up on the air again.

### 2 metres

There's been a bit of activity on the 2 m band with DX all over the place. 5th June had Dave ZL2MQ working Roger ZL3THQ at 577 km. The 6th had Rod ZL3NW working Harry ZL2ADU at 451 km.

On the 9th June, Dave ZL2MQ in Napier, worked Anatoly RK3FG in KO86 (Russia) via EME. This was his first contact via EME so he will be pretty chuffed about that. Great effort!

On 14th June Bob ZL3TY worked VK3AMZ via EME on JT65 at 2329 km. The 28th June, had Geoff ZL3PX in Christchurch working Harry ZL2ADU Opunake at 466 km on 144.2 a good 5x5 contact.

Harry ZL2ADU was busy that day also working Roger ZL3THQ with a good 5x8 contact at 466 km.On the 5th July, Mark ZL2WHO was worked by Nick ZL1IU at 586 km on SSB as well as ZL2LN at 234 km.

It's also good to hear a bit of activity on 2 m SSB with a few calls that haven't been heard before, some are newish hams while others have awoken from a deep slumber and hit the airwaves again. Good to see!

### 70 cm

The contest in June had some 70 cm contacts made and good contacts were had amonsget the group of ZL1TPH, ZL2IP, ZL1AKW, ZL1TBG and ZL1SWW, good signals all round with contacts at 295 or more km.

Stuart ZL2TW also mentions "A new D STAR radio (ID-880H) found its way into my bag at the AGM in Masterton, funny that. I just fired it up and had a QSO with Mark ZL2UFI via the Mt Clime 860 UHF D-STAR repeater. Error rate was mostly zero with my set on low power (5 W) which I guess is not bad for a partially obstructed 120 odd kilometre path.

Possibly the first Mainland to North Island D STAR contact, not exactly a technological milestone but worth mentioning!"

Mark ZL2WHO has been hard at work with testing the new beacon on 432.271 MHz which will finally reside at Waipuna in the Manawatu.

### 1296 and above

During the contest on June 8th, there was a bit of activity on 1296 with contacts from home QTHs up from Auckland to Tauranga in no lift conditions.

Catching up with some of our VK friends over email, they say that in VK there is a lot of microwave activity and interest there. There is a heap of interest on 10 GHz especially. With all the different types of kit around for the microwave bands, makes it easily achievable to the beginner to get started.

### Change of VHF Contest Manager

In regard to VHF-UHF-SHF-EHF contests ahead, the collation and scoring will be taken over by the Auckland VHF Group, on behalf of all VHF groups, including all New Zealand radio amateurs and supported by NZART.

This was discussed and decided at the Easter 2013 VHF/Technology Convention, and agreed with acclamation; Stephen Hayman ZL1TPH who volunteered to take on the job will be supported by members of the Auckland VHF Group. This will occur prior to, and include the 2013 Microwave Contest, announcements to follow in HQ Infoline and other publications.

Also an email address for all contest logs and enquiries to <VHFcontest@nzart.org.nz>

### Other Activity

Sadly the ZL1ZLD DSTAR node had a bit of an accident where the gateway was off the air for a week or so. The server died to the extent that the system would power on but nobody home. It was as if the BIOS had parted company from the main board. A temporary server was standing in until the main server could be repaired. It is now back on the air again and working happily. There were some very close lightning strikes and the power was out for a bit. Seemingly some near field hit must have killed the main board.

Simon ZL1SWW embarked on a project to supply a small group of hams with a 70 cm PA PCB. The design originated from IT9VKY but was re done to remove closely spaced tracks as well as add Plated Through Holes (PTH) where needed. Now we just need to get the parts together such as the Semco or Unelco caps. (Anybody know a good source of ATC high voltage chip capacitors as an alternative?) The boards are good for 100 W each using MRF646 devices. Some of us want to parallel up a couple for 200 W or so.

There was a talk session at AKL VHF group with a bring and show evening of your favourite microwave bands. Several people brought equipment and speakers involved Peter ZL1UKG, Grant ZL1WTT, Harry ZL1BK and Simon ZL1SWW.

### Technical

The scribe was having a nice chat to Quentin ZL1QF who is also now VK4AQF and happily ensconced in Brisbane. He was back for a few days in ZL and was doing a bit of a catch up on the phone. He raised my attention to a little chip he's been playing with which is a full synthesiser chip with integrated VCO that can cover 23.5 MHz to 6 GHz. He's

# AREC – Amateaur Radio Emergency Communications

Geoff Gillman ZL3QR and Bev Gillman ZL3OV

*AREC Mission Statement:*
*To be the preferred provider of Emergency Communications to New Zealand Emergency Services.*

Hi, Everyone. We begin with the final part of the equestrian endurance event plus some short stories of various activities around the country. Our local AREC Section was involved with the aftermath of the recent snowstorms and there should be a story on that in the next issue. Meanwhile, enjoy.

### Marlborough Equestrian Endurance Event (Cont'd)

Day two was scheduled a more cruisey start at 0400! The day began much the same for us on base. Rebecca returned to the radio base after working an evening shift and caught a few hours sleep before helping to coordinate the information flow. Luckily the night was a little warmer. Min temp around 12 degrees and whilst it was initially a very starry and clear night, by start time there was some cloud cover. This cloud cover continued in to the day, making things a lot cooler for everyone. This also meant that the horses could move a little faster, not having to worry as much about overheating.

Bill and Harry made their way to their positions. There was a heart stopping moment when Harry first logged on. For some reason his transmissions were almost unreadable. Sounded like really bad phase distortion. Harry moved about 10 metres to be exactly where he was the day before, and his transmissions were once again clear. Much to everyone's relief.

Paul headed in to Check point 4, and worked some breakfast DX on HF. This checkpoint continued later than advertised, as some competitors made extra distance in the forest loop, taking a wrong turn to another area. Possibly some markers had come down overnight.

The event proceeded well. In fact the times were a little quicker. Possibly due to the cooler conditions. A quick phone call to Stuart, around breakfast time, to see if he could be a little early at checkpoint 3. No problem, and all was well. Thanks Stuart. Thanks Tony.

Our involvement finished about 1530. Stuart brought some lost property back to base. We closed down "Endurance Base" and made our farewells to the organisers. Kaye took Rebecca in to town for a well earned break.

Stuart and I returned to the STSP site to retrieve the repeater about 1730 on Sunday 17 Feb 2013.

Battery was still 12.6V open circuit. Thanks Grant for your input in to this STSP. It is a fine resource indeed.

### Lasting impressions of the weekend

The organisers, officials, and competitors were extremely friendly and helpful to us. They patiently explained the event and some of the rules to us. The competitors also answered patiently our many questions about their horses, and their equipment.

They helped us translate the language of the event; . we learned "vetted out" means the horse was unable to pass a vet check and had to retire. We also heard the term "strappers"; initially the girls heard it as 'strippers' and were quite excited, however we learned the term was "strappers" and the only thing undressed was the horse! Other titles like "Ground Jury" means really important dude that makes decisions. "Foreign Judge". apparently means someone important from the North Island?

The horses are amazing creatures. They are smaller and leaner than the average horse. Apparently their metabolism is quite different, and enables them to produce energy over a sustained period. They seem to be most resilient, and capable of quite a turn of speed when required.

The radio team came together well. We provided comms for an event where most of us are not at all familiar with the assets being tracked. A comment from the Event TD was that we were good to work with. We took this as praise for our efforts.

Thanks to Paul (ZL2RE) for doing the liaison work and sorting out the map locations. Thanks also to the site testing team. The communications were different from what we initially expected. Was really good to know what our signals were likely to do over the course of the day.

Thanks to Bill, and Harry, for making really sure they could find their positions in the dark. Thanks to Chris, and Tony, for coming in to checkpoint 3. We only got access to this very close to the event. Thanks for going to the trouble of changing vehicles for the event too. Thanks to Stuart for the assistance with deploying and retrieving the STSP. Thanks Kaye, and Rebecca, great job on the base, well done.

This has been a fun and challenging event to be involved with. I believe we added value to the weekend, and hope the organisers would have us back again another time. Thanks to all who were directly involved, and also those who supported us in other ways.

*Rob Carter ZL2IW*
*for Marlborough AREC*

### Wallaceville Hill Climb; 3 February 2013

A hot but dry day at the Wallaceville Hill Climb, and thankfully no real mishaps! We were on site at 7.30 am for our own briefing and this was followed up with a drivers' briefing at 8.00 am. The road was closed at 8.30 am and racing was due to commence at 9.00 am but the race timing gear proved a problem. This problem was resolved with replacement parts and the first to two practice runs took place. The cars were divided into two groups one of seventeen and another of sixteen. Each car took between 60-65 seconds to complete the 1.6 kilometre course. Once this was completed each vehicle then did a further three timed runs with best run counting for the winners. All racing was completed at 2.20 pm and we were stood down at 2.30 pm.

Communications was via 146.500 MHz FM (simplex) and proved good on the day. A debrief later at the Branch 63 Clubrooms has suggested perhaps that the STSP Repeater might assist, especially to coverage further down the Upper Hutt side of the Wallaceville Hill Road where communications were not as good. This test will be completed over the next few months.I have the following members to thank for assistance with the event: ZL2ARN, ZL2BRG,

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been making a signal generator and pairs it up with a Hitite HMC624LP4 / 624LP4E digital attenuator to get an output down to -60 ish dBm.

The chip is a Maxim MAX2870. It is an ultra-wideband phase-locked loop (PLL) with integrated voltage control oscillators (VCOs) capable of operating in both integer-N and fractional-N modes. Being a fractional N PLL should yield some good phase noise characteristics. The chip is 5 mm x 5 mm, 32-pin TQFN package. That's going to be a tiny thing to work on! It's programmed by 3 wire SPI and has a MUX output to select what comes out of this pin, most likely people will use it for Lock Detect. It could definitely have some possibilities such as a cheap wideband signal generator or maybe forming the basis for a local oscillator for transverters providing the phase noise performance will be acceptable. The chip will output up to +4 dBm.

### 2013 VHF-UHF-SHF Contest Calendar

***Brass Monkey Contest***. All bands 50 MHz and up. First Saturday in August, and the following day.

***Microwave Contest.*** All bands 614 MHz and up. First Saturday in October, and the following day.

***Field Day Contest.*** All bands 50 MHz and up. First Saturday in December, and the following day.

For all contests, the operating periods are 1700 to 2300 on the Saturday, and 0700 to 1300 on the Sunday, NZ local time. The Contest Rules are available at: <www.vhf.org.nz/VHF-UHF-SHF-ContestRules>. All contest logs should be sent, to arrive within two weeks, to: <zl2wa@clear.net.nz>

### Summary

Many thanks go to the contributors who help make this column happen with their input – ZL1TPH, ZL3NW, ZL2TW and others. If you have input and pictures for the columns ahead; such as DX activity reports, repeater installation, branch activities, snippets of interest, technical items etc, please send to Simon ZL1SWW at <zl1sww@nzart.org.nz> or *Call Book* addresses. (I also accept large picture files sent via email).

ZL2OLY, ZL2SET, ZL2SFM, ZL2UFI, ZL2UX, ZL2UDF, and ZL2UGL, MarkZL2UFI.

*Mark Gooding ZL2UFI*

### Pelorus Search

At 1000 Wednesday May 1st Marlborough Branch 22 Section Leader was activated by the Blenheim Police. Paul ZL2RE/ZK8EO was unable to leave work immediately; Stuart ZL2TW/ZK8EOS was available and reported to the Blenheim Police station. After an altercation a woman in her twenties had been dropped on the side of SH6 near Pelorus late the previous night. Indications were that the search might be more of a forensic nature with a Police officer being a member of each search team.

The search was to be along the Pelorus River both on the river bank and by kayak, from the tearooms toward Havelock. There are several VHF repeaters available on Saddle Hill which at 4000' has good coverage of the search area. In the past we have used the DOC ESB repeater, however we have found that DOC do sometimes get concerned with battery life (solar-powered) if a search continues for more than a day. A quick phone call to Dave ZL2BCA in Nelson and we had access to the civil defence ESB repeater on Saddle Hill, which is also solar-powered but has good battery capacity and gets little use.

SAR Tait TP8100 hand-helds were allocated to the search teams, including the first use of the Branch 22 Tait AREC sets. The teams departed from the Blenheim Police station at 1230 and later that afternoon the person was located deceased in the river not far downstream from the Pelorus tearooms. VHF coverage of the search area was excellent; the next task will be to make an approach to Nelson Civil Defence to get permission for future use of the Saddle Hill repeater for future SAR use.

*Stuart ZL2TW*
*for Marlborough AREC*

### Punga Cove Search

Paul ZL2RE/ZK8EO and Stuart ZL2TW were activated at 2230 on 23rd May. A woman in her early seventies had gone for a walk in the bush behind Punga cove in the Endeavour Inlet located in the outer Queen Charlotte Sound.

The missing person had failed to return to the rented bach they were staying in by nightfall. Eight searchers were despatched to the search area from the Blenheim Police station via a coast guard vessel. Communications was via Tait TP8100 hand-helds using the marine channel 1 repeater on Mt Stokes. Traffic volume was low during the night so the AREC personnel returned home with the SAR sergeant managing the search using an AREC Icom base set at the Police station until the morning.

Mt Stokes at 1200 metres is the highest point in the Sounds located between the entrance of the Queen Charlotte and Pelorus Sounds and gives good coverage of much of the Sounds. The marine channel 63 repeater overlooking Tory Channel was not used as high ground behind the cove may have shielded coverage.

At 0800 as the decision was being made to escalate the search, which would have involved calling extra SAR personnel from Nelson, the missing person was located in her rented bach, having returned quietly after being reported missing the night before!

*Stuart ZL2TW*
*for Marlborough AREC.*

### Activity Briefs

(A selection from May/June)

*1/5/2013.* Marlborough Branch 22. SAR. Pelorus River, Marlborough. Look for missing female. Body found next day on gravel bed downstream.

*6/5/2013.* Marton Branch 23. SAR Training. Union Line – Rangitikei. Manage Radio comms for night exercise in plantation area, exercising containment procedures. Excellent activity, much gained by teams.

*8/5/2013.* Manawatu Branch 20. SAR Foxton Beach / Forest 80 yr old lost in forest area. Set up rpt. Radio checks with teams before they set of for search. 9 teams. Lost party found safe and well next day.

*9/5/2013.* Marton Branch 23. SAR. Foxton Beach Township. Male 83 missing from his home and presumed missing in plantation area beside township. Went walking with dog for usual daily walk. Concerning medical issues required immediate response. Manawatu Section responded that evening and Wanganui were called to assist next day, report at 0800 hr at Foxton. MP located fit and well about 0845 hr next morning, had fallen down bank and become disorientated.

*17/5/2013.* Southland Branch 37. SAR Training. Stewart Island. LandSAR Tautuku Cup 17-19 May 2013. Invercargill and Dunedin sections provided Communications for the Competition which involved eight search teams. Base was set up at the Oban Fire Station. We used three portable repeaters ESB57, ESB60, DOC20 and simplex on ESX07. Event was very successful with Dunedin LandSAR Team taking home the Cup. Stewart Island really know how to put on a spread, with finger licking good oysters, mussels, salmon, paua, and blue cod plus much more.

*18/5/2013.* Otago Branch 30. SAR. Middlemarch. Search for a high school group who became lost in the Rock and Pillar range while tramping to Big Hut. Radio communications was provided to mobile teams via the Otago Regional Council CD02 repeater. Teams were also issued with POLSAR HF radios. The Dunedin City Civil Defence Emergency Communications Unit was deployed to the area to monitor HF and base the ESB 164 portable repeater. The missing party was located some 3 hours after the initial page. They were transported to the Middlemarch Fire Station where they were given soup and dry clothes.

*23/5/2013.* Marlborough Branch 22. SAR. Punga Cove, Queen Charlotte Sound. Missing 71 year old female. Found next morning, tucked up in her bed

*27/5/2013.* East Southland Branch 08. SAR. Piano Flat. SAROP Hunter overdue. Missing Hunter found after spending a cold night out.

*31/5/2013.* Wairarapa Branch 46. SAR. Jumbo Hut, Tararua Ranges. A 22 year old hunter went looking for his dog that he had lost the weekend before around the Jumbo Hut and failed to return that night. After teams were dispatched into the hills, he was located by helicopter safe and well and airlifted out.

*9/6/2013.* Wairarapa Branch 46. SAR. Daggs Road, Ihuraua. A four-year-old girl who went missing from a farm near Masterton was found by a neighbour just before a large search and rescue team set out to look for her. The girl was last seen about 4.30pm. After an initial search by her parents and neighbours failed to find her, four off-duty police officers and 22 New Zealand Land Search and Rescue volunteers gathered at the home and were about to deploy. However at 8pm the girl was found by a neighbour in a wool shed 1 km from her home. She was in good health, despite initial concerns about her asthma.

*12/6/2013.* Manawatu Branch 20. SAR. Palmerston North city area. Missing 72 year old male, found safe and well.

*28/6/2013.* North Canterbury Branch 68. CD. Lees Valley, North Canterbury. Provide comms, Base to Helipad, for snow-raking operations, Okuku Hills area. Found original CD radio installation U/S, set up and operated a temporary system instead.

### Conclusion

Thanks to those who have contributed to this issue. Material for the next one to please be in our hands by 3rd September 2013. Photos, if included. preferably on a separate CD (with captions) mailed directly to us. E-mail pix may be acceptable but will be at the Editor's discretion and must not be embedded in the text. Contact details: <zl3qr@nzart.org.nz> or <zl3ov@nzart.org.nz> or post to 6 Boyd Street, Rangiora 7400, or phone (03) 313 7137. (N/B. Articles to please be in doc, rtf or txt format. Publisher or pdf we can not use. Thanks.)

### Reminder

The next Section Leaders Nets should be 19 August and 16 September, 3900 kHz USB at 1930 hrs NZST unless notified otherwise.

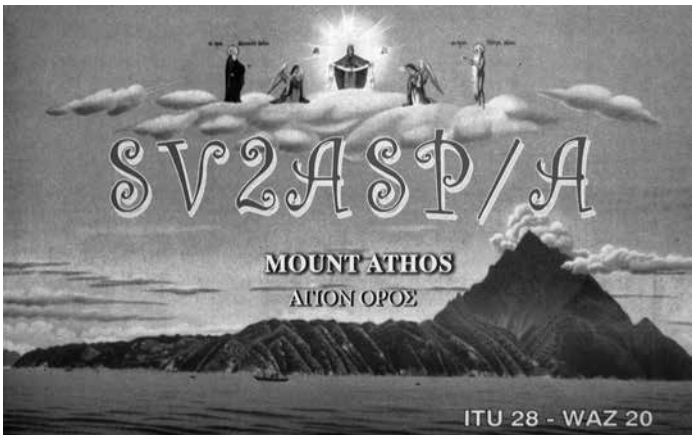
Until next issue,

73 *Geoff ZL3QR & Bev ZL3OV*

**REMEMBER:**
*Leave a three second pause between overs when using repeaters.*
*Someone else may have an urgent message.*

# DX Downunder

Graeme Hunt ZL1ANH and ZL1T
<graemeh@xtra.co.nz>




### Introduction

While our regular correspondent Graeme ZL1ANH is enjoying a well-earned DX trip to Europe, I foolishly accepted his invitation to write this month's column. There is no better way to appreciate the amount and quality of work someone does than to step into his or her shoes. Graeme, thank you for doing such a wonderful job. Hurry home mate, you're sorely missed!

### Band conditions

As usual during the mid-Winter and mid-Summer doldrums, HF conditions have been flat for the past month or two with slim pickings for Kiwi DXers. I was thrilled to bump into Monk Apollo, SV2ASP/A, on 17 m CW during the WPX CW contest at the end of May, and received his QSL card direct about a month later. A25RJ just happened to pop up on the very 17 m frequency I had been monitoring at 05:00z when, by chance, I was beaming his way, hoping to catch one of the more active OX stations via long path. I bagged 9G5AA on 30 m at a similar time: for some reason, Ghana had steadfastly eluded me for 8 years despite being way down the most-wanted lists. I guess most 9G operations spend their time beaming NE to Europe or NW to the Americas, but having said that I have worked plenty of other West African stations both short and long path. 9G5AA was activated during an IARU-sponsored ham training course, which hopefully means we will see more activity from Africa before long.

As we go to press, things are finally looking up on 17 m with good long path openings to Europe in the ZL mornings, followed by a reliable short path to North America around lunchtime/early afternoons and the odd European via short path as the band closes at dusk. Having heard only weak signals from him on the other bands, OJ0V was a surprising catch recently via the long path on 17 m at 23:30z, preceded 20 minutes earlier by TF3Y on a short-lived peak of QSB via the short path.

### Propagation tools

As we head past the peak of this somewhat underwhelming sunspot cycle, we should expect a gradual downward slide in HF conditions over the next few years with only minor, short-lived improvements on the high bands, which naturally implies exploiting those brief openings whenever they materialise.

Given the limited utility of propagation predictions (apart from pre-scheduling QSOs), I prefer to monitor conditions in real time. Here are my top five techniques:

The DXcluster network presents a steady stream of DX spots from around the world. There aren't that many of us spotting in Oceania, but when any of us are QRV on an open band, there is a fair to good chance of being spotted by amateurs at the far end. If you find some interesting DX on the bands, I urge you to spot them in DXcluster, especially anyone who is calling for VK/ZL/Oceania QSOs.

The Reverse Beacon Network (RBN) provides loads of spots for CW stations identified by automated Skimmer nodes. There are a few Skimmers QRV in Oceania such as ZL2HAM (Rick in Nelson), WH7W and KH6LC. Additional nodes in the South Pacific would be very welcome.

Beacons reward the effort needed to monitor them on a regular basis. The NCDXF beacon network running on 14100, 18110, 21150, 24930 and 28200 kHz is particularly useful since monitoring those few frequencies for a couple of minutes each is all it takes to find out what directions are open on any of the high bands. Four of the 18 NCDXF beacons are QRT at present including 4U1UN at the UN HQ building in New York, offline for an extended period while the building is re-roofed. Perhaps there's a sales opportunity for an enterprising Kiwi long-run steel roofing fabricator!

Listening, tuning around, scanning the whole band and stopping to investigate any signals heard. It would be a terrible shame if this became a lost art due to the predominance of cluster spots, but someone has to be the first to work any new DX that appears. Compared to slogging it out in a cluster-induced pileup/feeding frenzy, being there at the right place, right time to catch a new one makes things easier, especially for the little pistol stations.

CQing. Sometimes, even an apparently dead band turns out to have been only resting. CQing on a loop using a memory keyer or voice keyer takes the drudgery out of it, and is a good way to pass the time while writing out QSL cards, reading *Break-In* or constructing something in the shack.

### DX operations

Mid to late-summer in the Northern hemisphere brings out the holiday operators, often from sun-baked islands. The RSGB IOTA (Islands On The Air) contest at the end of July will be over by the time you read this but keep your ears open for island-hopping DXpeditioners still going strong. Compared to the big multi-op DXpeditions, holiday ops tend to be more laid-back and less experienced, as well as weaker. They generally have better things to do than battle rude and insistent callers, so patience and good humour helps. The knack is to transmit your call-sign at precisely the right moment, frequency and tempo to catch their attention. It is fantastic for Oceania stations to make it through those unruly European pileups, and always brings a smile to the DX op at the far end. The better ones may even put the rabble on hold after working one of us in order to listen for more DX, so it pays to be ready to QSY immediately to the transmit frequency used by another Oceania ham in the pileup if one of us makes it through (once the QSO is complete, that is!). That in turn implies listening to both the DX station and the pileup, either with a dual-RX radio or a separate receiver, or through deft taps on the A/B or Tf buttons.

During August and September, we can look forward to the following DXpeditions and DX work placements:

*Afghanistan T6MH;* Mike KI4MRH is active mostly on JT65 until October. QSL via W2GR.

*Bear Island JW9JKA;* Svein is operating SSB part-time from IOTA EU-027, the island in the southeast of Svalbard, until mid-December. QSL direct to his home call, LA9JKA.

*Bolshevik Island RV3EFH/0;* IOTA AS-042 is the most southerly of the Severnaya Zemlya islands in the Russian Arctic. Vladimir intended to be QRV on all modes on 40, 20, 15 and 10 m, but has only been spotted on 20 m JT65 so far this year, with some 10 and 20 m SSB from there last year. He normally runs barefoot into multiband verticals. QSL via RZ3EA.

*Côte d'Ivoire TU5DF;* Dim is mostly active on CW plus some SSB and PSK31 from 40 to 6 m, using a fishing pole vertical in Abidjan. QSL direct via F5SWB.

*Hajo Island DS4DRE/4;* Kang is operating SSB and CW on IOTA AS-060 until the end of the year.

*Jersey Island MJ/OT9Z;* IOTA EU-013 is easy to access by air and sea, hence it is not terribly rare and yet I still have several band/mode slots left to fill. The Jersey amateur club is very friendly and welcoming so visitors often help out and operate from the club station, an ex-WWII concrete bunker looking out over the Atlantic Ocean. The Dudal family and friends from the Bruges club will mostly be using OT9Z, plus GJ2A in the EUHFC contest. QSL through LoTW or via team leader Frederik ON8ZL.

*Kenya 5Z4/LA4GHA and Somalia*

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*6O0LA;* Roger is working for the UN and will be QRV when duties allow until December 2014. QSL to his home call LA4GHA.

*Laos XW;* Steve 9M6DXX will be leading an experienced team to Vientiane in September.

*Mindanao Island DU9/PA3GZU;* Maarten takes another holiday to IOTA OC-130 until 9 August. On his 2011 trip, he mostly operated 20m SSB. QSL to his home call PA3GZU.

*Mozambique C91GBA;* Antonio will be QRV until mid-December. He has been spotted on SSB on 20, 15 and 10 m so far. QSL via his home call, EA4GBA.

*Reunion Island TO1PF;* on August 3rd and 4th a team of sixteen will once again operate HF-UHF from Piton de la Fournaise (peak of the furnace), IOTA AF-016. The 2600 m high volcano, a UNESCO World Heritage site, is reminiscent of many geothermally active sites in ZL. QSL via FR1GZ.

*Sapelo Island K4S;* a group of about a dozen ops will activate IOTA NA-058 briefly in September.

Saint Kitts Island V47JA and V47HAM; husband and wife, John (W5JON) and Cathy (W5HAM), will be active from IOTA NA-104 until August 10th. QSL via LoTW or direct to W5JON.

*Saint Marcouf Island TM0SM;* a French team will activate IOTA EU-081 on 40 to 6 m SSB and CW during two weekend trips in August. With four QRO stations feeding verticals, they are keen to work stations outside Europe. QSL via F5CWU or Club Log OQRS (Online QSL Request Service; pay via PayPal for direct cards, bureau cards are free).

*Zhuravlinyy Island R20RRC/8;* a special call celebrating the Russian Robinson Club's 20th anniversary. Having been QRV from Sidorov and Lesin Islands already, Max plans to visit Zhuravlinyy Island AS-109 before the end of September. He evidently enjoys operating SSB, CW and PSK31 on 40, 30 and 20 m. QSL via RZ3EC.

Looking further ahead, TO2TT Mayotte should make an appearance during October, plus XR0ZR Juan Fernandez and S2 Bangladesh during November, YW0A Aves Island at the end of this year or early next. Keep an eye on the DX news websites, DX newsletters and DX club reflectors or listen to the DX news broadcasts to catch the buzz. Persistent rumours concerning North Korea P5 indicate diplomatic efforts to persuade the P5 authorities of the value of amateur radio: it is entirely possible that a 'demonstration station' may appear on the air at any time, as may one or more idiotic pirates, so the rule is WFWL (Work First Worry Later).

We thank our many sources including 425 DX News, Ohio/Penn DX Bulletin, DX-World.net, DXcoffee.com and others. If you are planning a DXpedition, please email the details to Graeme ZL1ANH <Graeme@extra.co.nz>. Pacific DX operations are invariably of interest in Europe and the Americas, including places that are easily accessible from here such as ZL7, VK9N, E5, A35, 5W and 3D2.

### New IRCs

The new "Czech" series of IRCs (International Reply Coupons) went on sale on July 1st and will remain valid until the end of 2017. We have until 31st December this year to redeem any "Nairobi" IRCs we still hold, and had best avoid sending them out with QSL requests since the recipients may not have time to redeem them. Personally, when visiting the local post offices, I find it helps to have at least one outgoing airmail letter to be sent using one IRC, and with that out of the way the staff will normally exchange any additional IRCs for stamps of the same value. IRCs are uncommon so junior staff may be uncertain but the Head Postmaster or Postmistress should know how to process and cancel them at the till.

Overseas, IRCs are becoming harder both to buy and to redeem. While about 115 countries still sell them, the UK, US and many others no longer sell IRCs. Member countries of the UPC (Universal Postal Union) are obliged to redeem them at the rate laid down in the UPS agreements, but some foreign post offices flatly refuse or insist on taking multiple IRCs for each airmail stamp. With green stamps (US dollar bills) increasingly being stolen from incoming post in some parts of the world, there is increasing pressure to move towards LOTW (ARRL's Logbook Of The World) and services such as Club Log's OQRS (Online QSL Request Service). Some DXers welcome email requests and PayPal payments for direct cards, while most DXpeditions welcome a few extra dollars towards their expenses, whichever QSL method you use.

### Timekeeping

I recently came across the free NTP Network Time Protocol software from Meinberg see <www.meinbergglobal.com/english/sw/ntp.htm>. Once installed and configured, the software automatically identifies and synchronises the PC clock with the best available time source, frequently at first but less often as it settles down. Other options include Dimension4 <www.thinkman.com/dimension4/>, AboutTime <www.arachnoid.com/abouttime/> and Atomic Clock Sync <www.worldtimeserver.com/atomic-clock/>, as well as the Internet time function built-in to recent versions of Windows.

## FMTAG – Frequency Management and Technical Advisory Group

Secretary: Doug Ingham ZL2TAR
<fmtag@nzart.org.nz>

The following Proposals were published in HQ Infoline 277, for the information of, and seeking comments from, NZART members.

Branch 05 Christchurch has applied to relocate its 2 metre beacon to the University of Canterbury Physics Department building, located at TOPO50 BX24 662.50 811.50. An engineering evaluation, in accordance with RSM document PIB38, confirms that the beacon can remain on 144.285 MHz and that there will be no interference to other stations.

Branch 05 Christchurch has applied to relocate its 70 cm beacon to the University of Canterbury Physics Department building, located at TOPO50 BX24 662.50 811.50. An engineering evaluation, in accordance with RSM document PIB38, confirms that the beacon can remain on 432.285 MHz and that there will be no interference to other stations.

Branch 81 Waikato VHF has applied for a 2 metre Repeater at Te Keho, located at TOPO50 BC36 568.06 668.45. The repeater transmit frequency will be 145.475 MHz and the receive frequency will be 144.875 MHz. An engineering evaluation, in accordance with RSM document PIB38, confirms that there will be no interference to other stations.

Branch 81 Waikato VHF has applied for a 70 cm link at Te Keho, located at TOPO50 BC36 568.06 668.45. The transmit and receive frequency will be 430.1125 MHz. An engineering evaluation, in accordance with RSM document PIB38, confirms that there will be no interference to other stations.

Branch 81 Waikato VHF has applied for a 70 cm link at Te Weraiti, located at TOPO50 BD36 557.86 103.54. The transmit and receive frequency will be 430.1125 MHz. An engineering evaluation, in accordance with RSM document PIB38, confirms that there will be no interference to other stations.

### Final recommendation to NZART Council

At its July 2013 meeting, NZART Council approved the following application.

Branch 26 Nelson has applied for a one-way link from Grampians, located at TOPO50 BQ26 234283. The transmit frequency will be 438.900 MHz. An engineering evaluation, in accordance with RSM document PIB38, confirms that there will be no interference to other stations.

### Comments and Applications

Please send your comments and suggestions on the above, and on any other FMTAG matters, by e-mail to: <fmtag@nzart.org.nz>

Applications for repeaters, beacons, digipeaters, point-to-point links, and so on, should be made on the latest version of FMTAG Form 10. The latest versions of FMTAG Form 10, and the explanatory Form 10A, are available on the NZART website: <http://www.nzart.org.nz/fmtag/index.html>. Completed forms should be sent by e-mail to <fmtag@nzart.org.nz>

# Old Timers' Club

Stephen Hayman ZL1TPH
<zl1tph@nzart.org.nz>

### From the desk of the "Grand Old Man"

Greetings, I trust that you are all wintering well. Firstly, I would like to express my appreciation of being re-appointed as Grand Old Man for the ensuing year, the conference in Masterton was a real success and the Annual General Meeting for the OTC went well. It was a pleasure to put so many faces to call-signs. I am sure that all those who attended the Conference would have left singing praises for the organisers.

We are all aware that we do not pay an annual subscription to be a member of OTC, the only way our funds accumulate are by donations and a one off fee for a new member. Expenses such as postages and stationery are always increasing, with this in mind it was decided to pass the Grand Old Man's hat around at the AGM to raise some additional funds.

If there is anyone who was unable to attend conference and would like to make a small donation please send them to our Secretary, Barry Stewart ZL2RR, 1 Caversham Road, Wanganui. Any donations will be gratefully received and faithfully applied.

Until next time I wish you all good health and many Delta X-ray.

73 *Ivan Horn ZL2ATU,*
*Grand Old Man OTC (ZL)*

### Old Timers' Club-OTC (ZL)

- To recognise service to Amateur Radio;
- To revive and maintain interests and good fellowship among the older members in the common cause;
- To offer advice and encouragement to newer Amateurs;
- The Club is affiliated to the New Zealand Association of Radio Transmitters (Inc.)

### Minutes of the Annual General Meeting

Meeting Held at 0900 on Sunday, 2nd June 2013 at the Copthorne Hotel and Resort, Solway Park, Masterton. Grand Old Man Ivan Horn ZL2ATU and Stuart Watchman ZL2TW Co-Chaired the meeting with Secretary /Treasurer Barry ZL2RR as scribe. Ivan opened the meeting and welcomed the 15 present.

***Present:*** ZL2TW Stuart Watchman, ZL2BHF Jim Meachen, ZL3PAH Phil Holliday, ZL3CK Martin Seay, ZL1KK Iain Harrison, ZL1BNB Mike Newman, ZL1TAJ Neill Ellis, ZL2KE Steve Lee, ZL1MG Ted Bretherton, ZL2AZ Peter Lake, ZL4TAE Terry Thomas, ZL1BAB Bill Cooper, ZL2ATU Ivan Horn, ZL1TPH Stephen Hayman, ZL2RR Barry Stewart.

### Silent Keys

Members stood for a period of silence in memory of those who had become Silent Keys.

### Minutes

The Minutes of the 2012 Annual General Meeting were read and confirmed. Moved Mike Newman ZL1BNB, Seconded Neill Ellis ZL1TAJ – Carried.

Business Arising out of the Minutes: Nil

### Annual Reports

The Secretary/Treasurer's Annual Report and Financial Statement and ZL1 District Representative's reports were circulated and taken as read. They were adopted. Mike ZL1BNB / Martyn ZL3CK Carried.

### Election of Officers

***Grand Old Man:*** Ivan Horn ZL2ATU was reappointed.

***Secretary / Treasurer:*** Barry Stewart ZL2RR was reappointed

***Net Controllers:*** Current: Don Dalrymple ZL3SZ, Stuart Watchman ZL2TW, Pete Moore ZL2AUB, Doug Alexander ZL2AWF (AM Net), Ivan Horn ZL2ATU

All the current Net Controllers were reappointed. New: John Poulsen ZL2TCA and Joe Morrison ZL2JM were elected to the panel by the meeting.

***District Representatives:*** ZL1: Stephen Miller ZL1FS, ZL2: Stuart Watchman ZL2TW, ZL3: Don Dalrymple ZL3SZ, ZL4: Peter Anderson ZL1LR. All representatives were reappointed. Scribe for OTC *Break-In* column; Stephen Hayman ZL1TPH was reappointed and congratulated on the high standard of presentation he has set.

***Honorary Auditor:*** Leo Boyle ZL2BGE

***Bank account signatories:*** ZL2ATU and ZL2RR

*Top Table OTC 2013 AGM, Masterton; ZL2RR ZL2ATU and ZL2TW.*

*Left Montgomery cup awarded to George Newlands ZL2AG for best OTC Member's article published in Break-In 2012-13.*

*OTC Secretary presenting the OTC Cup to GOM 2013-14 Ivan Horn ZL2ATU.*

### Presentation of Montgomery Cup

For best article in *Break-In* by an OTC member during the preceding year; George Newlands ZL2AG was awarded this prestige cup for his article in the April and June 2012 OTC pages.

### The next OTC AGM

The next AGM of OTC is to be held on the Sunday of Queen's Birthday Weekend 2014. Venue yet to be notified!

### General Business

The meeting passed a vote of thanks to Leo Boyle, ZL2BGE for his writing of a program to bring

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continued from page 35

about a quantum improvement in the management of the Master OTC Membership records and awards. A letter of thanks to be sent to Leo,

The Secretary then read out a number of 'unlisted' members seeking help with the status of those call-holders. A hat was provided for collecting donations towards the Club's funds. The Meeting Closed at 0940 hours.

**OTC Secretary Notes**

July – August

The 31 May marked the 60th Anniversary of the founding of the OTC (ZL). An article to mark this milestone was prepared for the last *Break-In* but, through circumstances beyond the OTC's control, ended up being published in the H/Q Info Line, Issue 275 of the 21 June 2013.

**Silent Key**

It is with sadness we farewell the following members:

# 791 ZL1AF, Ian Ogier, Palmerston North

# 1064 ZL2VI, Ted Manning, New Plymouth

Our sympathies are extended to all families and friends. A minute's silence was observed on the Monday night nets.

**New Members**

There are four new members to welcome this month;

# 1290, Russell Crompton ZL1BER, Kerikeri

# 1291, Steve Lee ZL2KE, Masterton

# 1292, Phil Holliday ZL3PAH, Christchurch

# 1293, Chris Kerr ZL2LO, Wanganui

**Certificates sent out**

The following folk have all received long service certificates:

***60 year Certificates:***

# 799, ZL1DD, Barry Kirkwood

# 913, ZL2AL, Lee Jennings, Napier

#1140, ZL1MW, Brian Huggard, Massey

***50 year certificates:***

# 1085, ZL4OE, Clive Cumming, Waimate

# 988, ZL3IS, Nobutaka (Oka) Oka, Christchurch

# 809, ZL2MP, Mike Colley, Richmond

# 1027, ZL3ADP, Dickson (Dick) MacDonald, Ashburton

Please Note: If you change your e-mail address, please remember to update the Secretary. It is not unknown to have an e-mail address or two being bounced when John ZL2TCA sends out the Monday Net reminders.

The Old Timers Club (ZL) has a provision in its constitution 4 (c) to recognise the older amateur with Associate Membership, subject to the following requirements: Associate Membership… Amateurs of 10 years standing, are of the age of 60 years or over, shall be admitted to the Club as Associate Members without voting rights and be issued with the appropriate certificate. A one-off membership fee of Ten Dollars is required to be included with any such application. (73, Barry ZL2RR)

Monday evening on air OTC net The ZL6OTC "On Air" net details are 2030 hr (local time) each Monday evening on 3.870 MHz LSB and all are welcome to check-in and say hello.

***"The Long Silence Falls"***

**Reviewed by ZL2AOH Ralph Sutton**

I received a package from RSGB, just after my 90th birthday and was delighted to find that it contained a copy of this handsome book that was a present from my good friend G3KMG-David Plumridge. Although I was never a radio officer (RO), as a deck officer I had served with and become friendly with many ROs, and of course many of our NZART members were members of that noble profession.

It is a production of the Radio Officers' Association (ROA), celebrating the 100 years of the ship-borne radio officer. It is obtainable on-line from the RSGB book store: <http://www.rsgbshop.org/acatalog/Online_Catalogue_General_Books_30.html>

The opening part is an introduction by Prof Brian Cotton, Life President of ROA, a foreword by Capt Richard Woodman, Elder Brother, Trinity House and a brief editor's note. The main content of the book is of articles that have appeared in the ROA's own quarterly newsletter, "QSO". It covers all aspects of how radio officers were trained, appointed to ships, and their shipboard life and shore-going escapades. Much reference to beer and baccy, and as most were adolescents, girls! As can be expected in a book on the era of ROs there are tales of wartime and other operational successes and failures. Discussed are various types of equipment, the part the Marconi Company played, appointments to specialised ships, shore stations and even radio operations from aircraft. New Zealand and Australia receive attention. There are two articles contributed by New Zealanders. David Smith ZL2WT wrote about his experiences as RO on a deep sea trawler (He added photographs, including one of himself.) Also one by ZL2GKB Iain Hill about the RMS Gothic includes a quotation from ZL2TX Nigel Hardy. There are illustrations of ships and ROs and an interesting supplement on the early use of distress calls.

The contributors are not professional writers, however, the articles are informative, entertaining and a really enjoyable read. It's a very heavy, handsome hard -covered volume 225 x 288 x 16 mm; the illustrated covers are reproduced below. Unfortunately there is no index, so it's not easy to refer back to something that you wish to research. If here is to be a reprint, I hope that this deficiency is rectified.

I learned a lot of things that I did not know before. For instance, some ROs reported that that, as radio silence was maintained, they were tasked with undertaking the visual signaling from the bridge in convoy. That never happened in any ship in which I served; we deck officers were the signalers. (That's how I honed my Morse capability on the Aldis lamp.) Also I was surprised to hear how many ROs there were on the big passenger ships, where a strong pecking order prevailed. The junior ROs mainly handled passenger traffic and news and the unpopular watches.

I feel sure our members, especially former ROs, will enjoy this book. Thanks David, it is a great gift.

This article, that has been slightly amended, previously appeared in the FISTS Down Under newsletter. <www.fistsdownunder.com>

Postscript; having said that I was never an RO, which is only partially true. When I served in the Union Steam Ship Company of NZ (USSC,) they only employed radio officers on their deep sea and passenger vessels. Radio operations in their other coastal ships were handled by the deck officers. The USSC had their own radio school that was in an old wooden building alongside the company's offices on Custom house Quay, Wellington. The school was run by Frank Graham. In addition to deck officers, the students included Union Airline pilots. We trained to obtain 3rd Class WT and General RT Operator certificates. The local RI, Herb Cassie visited frequently to test candidates. I obtained my two certificates in 1947 and operated in several USCC vessels handling QTCs and QTH and WX reports. Fortunately I never had to participate in distress or emergency traffic.

Note; RSGB has sold out of the book as has the publisher, the Radio Officers Association (ROA). ROA says that it has arranged for a reprint, but in a soft cover format rather than hard cover. Those interested in obtaining a copy should monitor the ROA website < http://www.radioofficers.com/> (ZL2AOH-Ralph Sutton)

**Acknowledgements**

Many thanks go to the contributors who help make this column happen with their input: ZL2AOH, ZL2ATU, ZL2RR and many others.

**Summary**

The OTC column in *Break-In* is a forum for members to publish a letter, or an article. OTC readers, along with association members, will all enjoy reading and hearing about other radio amateurs experiences, both past and current. Contributions can be technical, an account of first involvement with early amateur radio, nostalgia, along with vintage radio which all provides an invaluable source of information on the history of their hobby.

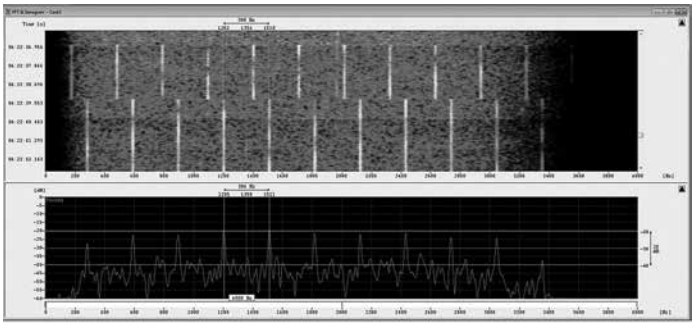
The "Old Timers' Club" was essentially a social organisation, and that is still current today. Articles relating to all aspects of OTC, are most welcome, and to be addressed to: Stephen Hayman, ZL1TPH; Postal address, 68 Kath Hopper Drive, Orewa, 0931 or via email to <zl1tph@nzart.org.nz> We also accept large picture files sent via email and will transcribe hand written letters to text.

73 *Stephen ZL1TPH*

# Monitoring Service #2

Monitoring Service Co-ordinator: John Martin ZL1GWE
<john.martin@nz1.ibm.com>

*John ZL1GWE's well-equipped shack.*



*OTHR on 10 metres.*

**What does the Monitoring System do?**

The International Amateur Radio Union (IARU) consists of three regional Monitoring Services, with New Zealand being in Region 3. The regional Monitoring Service is made up of volunteers who assist in reporting, identifying and dealing with non-Amateur interference on the amateur radio bands. The current coordinator for Region 3 is VK3HV, who resides in Australia. All Asia Pacific national coordinators send monthly intruder reports, which are collated and displayed regularly.

**Why do we monitor the Amateur Radio spectrum?**

The radio frequency spectrum is a limited, shared resource that is constantly under pressure from multiple users; not all of whom respect the rights of radio amateurs. It is therefore clearly in our interests to protect the amateur radio allocated spectrums allocated for our use. There are constant increasing demands for spectrum space and the tendency of some administrations to ignore their responsibilities under the International Telecommunications Union (ITU) convention. It is essential that the amateur service must maintain a strong and effective Monitoring Service if we are retain frequency spectrums allocated for communications, scientific experiments and emergency purposes.

**What is an intruder?**

An intruder is any non-amateur radio transmission in the exclusive amateur bands; however this also applies to the secondary allocations on a shared based of non-interference too. An intruder can be commercial stations, military, diplomatic stations and pirates too, using a combination of modulation techniques from analogue to digital communications e.g. Morse code, AM, SSB, wide band radar systems or oceanographic buoys and even encrypted digital signals from foreign countries.

**What equipment do I use?**

A number of aerials: including a 550 foot HF loop, directional aerials (two element Hexbeam), and VHF and UHF directional aerials. Receivers such as the NRD535 HF Receiver; Yaesu FT897D HF/VHF and UHF Transceiver; VHF and UHF ICOM R7000 receiver and my favourite a Winradio G33DDC HF Software Derived Radio. A SignalLink USB interface for recording, and for use with various free audio, digital and spectrum analyser software. I also use a very high speed computer, for analysing signals with software loaned from Wavecom in Switzerland due to my collaboration with the Intruder monitoring community in Region 1 – Europe and USA.

**What do you do, when you find an intruder?**

I have to verify whether it is legitimate, by using a number of resources, looking at spectrum licenses, ITU regulations, gathering evidence and asking other people to keep an eye out for a particular intruder. Or by analysing, whether the signal is permitted within the particular spectrum or whether it is causing harmful interference, disrupting other users. I also use collaboration with other intruder watchers via e-mail, web sites, DX Clusters, and reviewing their reports. Once an intruder has been verified, it is reported to the Radio Policy group within New Zealand, who liaise with their counterparts in Australia and if necessary it is reported directly to the responsible countries authorities. Hoping they heed our requests to have the intruder permanently removed. [1]

**What do you find works best?**

With the introduction of Software Derived Radio's, I am not limited to merely hearing and receiving signals, like the war time interceptors. We now have the ability to visually review intruder's signals in real time, to record them in real time, to analyse, or hold them for measurement purposes. It is possible to see the whole of the entire HF spectrum 0.1 kHz through to 50 MHz or to zoom into a tiny part of the spectrum to track intruders and report. I use conventional transceivers and receivers as well, as this is important to obtain maximum coverage through to UHF.

**What can you do?**

Actively encourage you to report unknown signals or potential intruders to assist the Radio Amateur community. You can either observe, record and send your comments directly to myself by e-mail or collate reports in a spreadsheet and provide them me on a monthly basis. Participate in the NZART Top Monitoring System Observer Award.[2]

**How do you benefit?**

By simply participating and assisting myself and other volunteers who monitor the frequency spectrum, by not ignoring strange sounds, noises or interference sources – some of which could be within your own house or within your own systems or they could be legitimate signals. You get to find your own noise sources, and clean up your own station and get to know what is legitimate or not, thus helping the whole community.

How do I report an intruder?

Simply e-mail your report to: <ms@nzart.org.nz or john.martin@nz.ibm.com> or send an e-mail to <IntruderWatch@googlegroups.com>, or even join the Australasian ham band intruder watch via Reference [3]

If we are successful within the IARU Region 3 in confirming, detecting and evicting intruders from the HF, VHF, UHF bands, we will share this success with you all. We need to ensure the Amateur Radio bands are available for your enjoyment and especially during an emergency situation.

*John Martin,*
*NZART Monitoring*
*Service Coordinator [4]*

**References**

1 <http://www.nzart.org.nz/nzart/monitoring-service/intruder-watch-rpt-form/
2 <http://www.nzart.org.nz/activities/awards/intruder-watcher-award/
3 <http://groups.google.com/group/IntruderWatch?hl=en
4 <http://www.nzart.org.nz/nzart/monitoring-service/

## Contributions to Break-In

*Break-In* is a forum for NZART member's amateur radio projects, experiences, opinions and news. Your contributions and feedback is welcomed. Contact the Editor John Walker ZL3IB at <john.zl3ib@ihug.co.nz>

# Contests

Contest Manager: Frank Hunt ZL2BR
<2bfrank@orcon.net.nz>



**Sangster Shield 2013 report from Glen ZL2KZ**

Thanks to all who took part this year. Numbers were steady with 16 logs received from about 20 active stations. Congratulations to Barry ZL2LN in winning the Sangster Shield, his second win to date. Graeme ZL2APV is second and Sid ZL2BIF third.

Barry ZL2LN also takes the Arthur Stevens Trophy as top South Island Station with seasoned entrants Bill ZL3VZ runner up and Alistair ZL2ARC 3rd. This is Barry's 7th win of this section since 2006.

Wellington Branch 50 entered 3 logs this year and once again wins outright the Branch award.

There were also no newly licensed entrants for the Transistor Trophy.

Unless there is objection I will request the Contest Manager to accept that this Trophy in future be awarded to the highest scoring first time entrant in the Contest.

The 15 qualifying active Branches were: 3, 8, 22, 24, 25, 27, 28, 29, 50, 56, 72, 77, 84, 87, 88.

I have deducted Branch 13 as a multiplier since Lee (ZL2AL) operated in the contest for just a single 30 minute period on the Sunday night and only 6 entrants managed 1 contact each. As usual I have not deducted the contact points, just the multiplier claims. May I re-iterate that I do not want to discourage any operator from entering the Sangster no matter how long or how few contacts they make.

A small number of VKs and other DX (E51, LU3 and W1) were worked on Saturday night but DX scores had no influence on the podium placements.

A number of logs contained duplicate contacts, in some cases recorded by both stations!

Graeme ZL2APV used a home-brew software defined radio (SDR) and reported that he completed the TX driver and RF output with just one hour to spare before the Contest. He appreciated the spectrum display and obviously benefited by the additional bells and whistles of this "rig". The use of SDR is a first for any entrant in the Sangster. I don't imagine Graeme used a straight key, though a number of entrants still do.

**Comments received:–**

- Noisy Sunday
- Sat signals strong, Sun weak.
- No publicity of this contest
- Heard VK's but could not work them
- Good activity this year
- More QSB/QRN on Sunday
- Poor NZART advertising
- Noisy Conditions but enjoyable
- Worked A35JP 5x5x9 both ways at 23:02 Saturday. Pity he was not on 2 min earlier!

**Publicity:–**

My apologies for lack of publicity about this contest. My attempts to get this contest into *Break-In* and NZART web Contest timetables and Infoline have repeatedly failed. I will try harder next year and also try for an item in the April Official Broadcast.

**Awards:–**

My apologies also that the 2012 Award Certificates were not actioned. I will post these out along with the 2013's as soon as the Contest Manager actions this year's results.

**Northland/North Shore Contest**

Monday 31st Oct 2013, 2000-2100LT in two half hour periods

**Bands:** 80 m (3.530 to 3.600 MHz suggested) and 2 m.

**Sangster Shield Results 2013**

**Sangster Shield – Open Section**

| Place | Station | Name | 0-5 W | 6W+ | DX | Brch | PWR | Total | Branch | Equipment |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ZL2LN | Barry Davenport | 159 | 0 | 1 | 14 | 5W | 11270 | 24 | Yaesu FT847, 80/40 trapped dipole |
| 2 | ZL2APV | Graeme Jury | 155 | 0 | 1 | 14 | 5W | 10990 | 27 | H/Brew Software Defined Radio. ½ w up 20 m |
| 3 | ZL2BIF | Sid McKain | 151 | 0 | 2 | 14 | 5W | 10850 | 72 | KW820S, 87 m loop sky wire. coax/ ladder |
| 4 | ZL3VZ | Bill Cousins | 150 | 0 | 1 | 14 | 5W | 10640 | 22 | Icom IC-706, 80m C/F dipole |
| 5 | ZL2KZ | Glenn Kingston | 151 | 0 | 0 | 14 | 5W | 10570 | 50 | H/brew valve xcvr, BLY87A final, 1/2W dipole |
| 6 | ZL2AUA | Mike Birch | 143 | 0 | 0 | 14 | 5W | 10010 | 84 | Icom 735, balanced Windom, NATO naval key |
| 7 | ZL2AYB | Wayne Fisher | 134 | 0 | 0 | 14 | 5W | 9380 | 50 | Yaesu FT840, 1/2w dipole |
| 8 | ZL1ANY | S. Pearce | 132 | 0 | 0 | 14 | 5W | 9240 | 28 | Elecraft K3, dipole |
| 9 | ZL1BWG | Bruce Scahill | 120 | 0 | 0 | 13 | 5W | 7800 | 28 | K'wd 120V, G5RV, Marconi 365B straight key |
| 10 | ZL2BHD | Graeme Bateman | 120 | 0 | 0 | 12 | 5W | 7200 | 87 | Yaesu FT7B. 80 m horizontal loop |
| 11 | ZL1WI | Roy Milam | 105 | 0 | 0 | 13 | 5W | 6825 | 3 | FT767 + H/brew transistor rig, 1/2w dipole |
| 12 | ZL2ARC | Alastair Christie | 97 | 0 | 0 | 12 | 5W | 5820 | 56 | Kenwood TS480, G5RV, SG239 auto tuner |
| 13 | ZL2ALJ | Tony Fletcher | 66 | 0 | 1 | 13 | 5W | 4420 | 50 | TS120, End fed 130' wire antenna |
| 14 | ZL4IM | John Norton | 77 | 0 | 0 | 11 | 5W | 4235 | 8 | TS850. 2 half waves in phase 80' up. |
| 15 | ZL2AQL | Mike Spearman | 55 | 0 | 0 | 9 | 5W | 2475 | 88 | Yaesu FT450D, FTC-902 tuner, C/Fed dipole |
| | **Transistor Trophy (opr licensed less than 1 year)** | | | | | | | | | |
| | NONE THIS YEAR | | | | | | | | | |
| | **Arthur Stevens South Island Trophy** | | | | | | | | | |
| 1 | ZL2LN | Barry Davenport | 159 | 0 | 1 | 14 | 5W | 11270 | 24 | Yaesu FT847, 80/40 trapped dipole |
| 2 | ZL3VZ | Bill Cousins | 150 | 0 | 1 | 14 | 5W | 10640 | 22 | Icom IC-706, 80 m C/F dipole |
| 3 | ZL2ARC | Alastair Christie | 97 | 0 | 0 | 12 | 5W | 5820 | 56 | Kenwood TS480, G5RV, SG239 auto tuner |
| | **Check log** | | | | | | | | | |
| | ZL1AIH | Ken McCormack | thanks Ken | | | | | | 29 | Elecraft K2, 80m 1/4W vertical |

**International HF Contest Calendar for August/September 2013**

| | | | |
|---|---|---|---|
| WAE (Worked All Europe) CW Contest | Aug 10/11 | 0000 UTC Sat – 2400 UTC Sun | <www.darc.de/referate/dx/contest/waedc/en/rules/> |
| SARTG (Scandinavian) RTTY Contest | Aug 17/18 | 0000-0800, 1600-2400 and 0800-1600 UTC | <www.sartg.com/contest/wwrules.htm> |
| SCC (Slovenian) RTTY Contest | Aug 24/26 | 1200 UTC Sat – 1200 UTC Sun | <lea.hamradio.si/~scc/rtty/htmlrules.htm> |
| All Asian SSB Contest | Sep 7/8 | 0000 UTC Sat – 2400 UTC Sun | <www.jarl.or.jp/English/4_Library/A-4-3_Contests/2013AA_rule.htm> |
| WAE (Worked All Europe) SSB Contest | Sep 14/15 | 0000 UTC Sat – 2400 UTC Sun | <www.darc.de/referate/dx/contest/waedc/en/rules/> |
| SAC (Scandinavian Activity Contest) | Sep 17/18 | 1200 Sat – 1200 UTC Sun | <www.sactest.net/#tabs-6> |
| CQ WW RTTY Contest | Sep 28/29 | 0000 UTC Sat – 2400 UTC Sun | <www.cqwpxrtty.com> |

# Around the Branches

### News from Nelson. Ham antennas in the news

First there was this item: 'Radio hams rush to defend antenna' The Nelson Mail reports that radio hams from around New Zealand and the world, have rallied in support of Nelson radio amateur Rick Kiessig ZL2HAM. Dallas Woods, who is understood to live in a property 100 metres from the antenna, made a presentation to the local council's public forum asking councillors to change the rules so that amateur radio aerials were no longer a permitted activity in residential zones or the "landscape overlay" which covers city ridgelines. Read the Nelson Mail story at <http://www.stuff.co.nz/nelson-mail/news/8464285/Radio-hams-rush-to-defend-aerial-after-neighbours-complain>.

Later a picture was published which is said to have been taken outside the property of Dallas Woods who lives some 20 metres higher up the hill and 70 metres horizontally from the antenna. It differs from the carefully posed picture published in a previous issue of the Nelson Mail which was taken just outside the home of ZL2HAM. If you looked carefully you could spot the antenna just to the left of the tree.

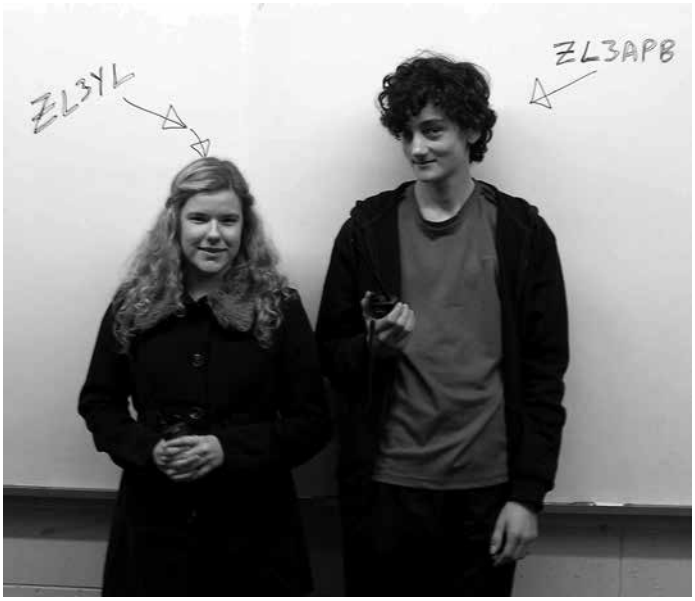
So common sense from a City Council has prevailed. May such sense spread to other Local Bodies, presently engaged in rewriting the rule books relating to antennas in NZ.

### Christchurch Branch 05

At the penultimate monthly meeting of Christchurch Amateur Radio Club at the Galbraith clubrooms, two of our young amateurs; Molly-Ellen O'Malley aged 17, and Aidan Barnsdale aged 15, were presented with the prizes awarded to them at the 2013 NZART conference.

Molly ZL3YL achieved New Zealand's under 18 highest exam mark (93%) in her amateur radio exam and was awarded a certificate and a VHF FDC handheld Radio. Aidan ZL3APB was awarded "Young Amateur of the Year" for his contributions to the local radio club activities and received a certificate and an Icon UHF DStar handheld Radio.

*Kelvin Barnsdale ZL3KB*




*Molly and Aidan.*

### Upper Hutt Branch 63 Special IRLP Event: Sunday 17 March 8.30 am on IRLP Node 6931

In 2003, the Mayor of Upper Hutt Wayne Guppy, and then current President of NZART Peter Norden ZL2SJ and members of Upper Hutt Branch 63 NZART celebrated with Wellington Florida's city councillor Bob Margolis the anniversary of the founding of Wellington Florida's Emergency Communications Management Centre. This link up was done via IRLP a VOIP linking system. The two men exchanged greetings and best wishes to each other over a period of some thirty minutes. Both were amazed at the technology involved the various matters in common they both had.

This year 2013, Wellington Florida's Amateur Radio Club again made contact with Upper Hutt Branch 63 to again renew this communication, but this time with the mayors of Wellington, Florida and Wellington, New Zealand. Bob Margolis now mayor of Wellington, Florida and Wellington's mayor Celica Wade-Brown were due to have a similar link up to the one described above. However due to a scheduling conflict Mayor Wade-Brown had to decline the request with a week to go.

Larry Lazar KS4NB President of the Wellington Radio Club (Florida) made contact with President of Upper Hutt Branch 63 to request assistance to arrange an alternative to for Mayor Wade-Brown. It was thought that ten years after their first contact the two Mayors from Wellington Florida and Upper Hutt would like to renew their friendship.

Upper Hutt Branch 63 readily offered to step in and make this QSO happen. The event when ahead on Sunday 17 March 8.30 am. via IRLP Node 6931 on the Mt Climie 730 VHF Repeater.

Both mayors again exchanging greetings and Mayor Guppy relived this time in America where he studied for his PhD at the University of Nebraska commenting on the recent poor performance of his beloved American Football team from the university. The team is known by its nickname the Cornhuskers and has fallen on hard times but he is hoping that it will return and perform better in the future. Comments were also given about the status of the drought here in New Zealand, which Mayor Margolis stated that they too had similar events and wished all Wellingtonians good luck for rain in the near future. Oddly enough the rain started just after the QSO finished so perhaps the 'rain gods' were listening.

Within fifteen minutes it was all over and the node and repeater were returned to normal operation.

I'd like to thank Larry, and both mayors for making the effort to be involved in the event, and making it such a success, and to also thank Wellington Branch 50 NZART and current NZART President Vaughan Henderson ZL1TGC for their assistance in the early planning stages.

We all hope to be around in another ten years to perhaps repeat the link up and who knows via what technology amateur radio will have explored at that time.

*Mark Gooding, President, Upper Hutt Branch 63 NZART*

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**Eligible stations:** All stations must have a single operator who *must* be a member of one or more of the following NZART branches: 78 Far North, 84 Bay of Islands, 28 Whangarei, 71 Rodney, 80 Hibiscus Coast and 29 North Shore.

Contacts within or between these branches are the only ones eligible for points.

Mobile/portable operation is permitted.

**QSOs:** Stations may contact each other in each half hour period in up to four different modes: 80 m phone, 80 m CW, 2 m phone simplex and 2 m phone via repeater (only the Far North, Bay of Islands, Whangarei, Brynderwyn and Rodney repeaters may be used.) "Twice running" QSOs are permitted.

**Exchange:** RS(T) report and 2 digit serial number/branch. (e.g. 5901/28).

**Points:** 80 m phone = 1; 80 m CW = 3; 2 m repeater = 1; 2 m simplex = 3

There are no multipliers or bonus points.

**Logs:** Date, time, frequency/mode (e.g., 80 m CW, 2 m repeater etc), exchange sent, exchange received and points claimed. On a separate sheet, your call-sign, name and postal address, email address, branch name and number, and a declaration that the contest rules and Radio Regs have been complied with.

**Entries to reach Contest Manager:** Mike Burch ZL2AUA, 767 Kerikeri Inlet Road, RD3 Kerikeri 0293, No later than Monday 4th Nov 2013. In addition to the individual winner, the branch with the highest aggregate of members' scores wins the privilege of organising the contest next year.

# WARO – nz womens amateur radio operators

with Topsy ZL2LS and Ngaire ZL2UJT
<waro@nzart.org.nz>

Greetings to you all, from the cold and wet South Island. It was great to see you all at conference in June and be able to have another chat with you all. After attending conference I returned home and then 3 days later flew off to Australia to spend some time with my son and his family who live in Lowood which is by the Wovenho Dam a lovely rural area. Was nice to catch up with them all, as it has been nearly 9 months since I last visited them. Then back to work.

Hi from the North, which by now is hopefully drying out. Our local Branch 27 has been installing a new 720 repeater on the slopes of Mt Taranaki, a major undertaking, but a great way to encourage the club to work together on a common goal. All is well here health wise, and we are excited about running the new Taranaki Award on the 10th-15th August (details on Awards page), please join us, its going to be great fun.

Conference has come and gone for another year, and how nice it was to see so many of you there. It was great o see many of the WARO members attending the alternative program on both days, thus giving us a great opportunity to enjoy the company of other members, and also the XYLs attending Conference. This is always a good opportunity to catch up with old friends and hopefully you made some new ones also.

The WARO AGM was held on the Sunday morning and was well attended by 16 members. Vaughan Henderson ZL1TGC NZART President also attended our meeting for a short time.

### Continuous Membership Awards

***50 year Certificates***

Norma Parsons ZL1ANP No2

***40 year Certificates***

Joan Beevers ZL3BJB No 13

***30 year Certificates***

Bev Gillman ZL3OV No 39
Bev Hebiton VK6DE No 40
Muriel May No 41

Due to none of these members being present their certificates were posted out to them. Congratulations to you all.

### Elected Officers 2013 / 2014

*President:* Kathy Purdie ZL2ADK email <purds@inspire.net.nz>
*Vice President:* Marlene Mathews ZL1MYL email: <perma@xtra.co.nz>
*Secretary:* Val Hawtree ZL2FO email: <grahamandval1@xtra.co.nz>
*Treasurer:* Heather Scott ZL2TYF email: <zl2tyf@gmail.com>
*Committee:* Bev Gillman ZL3OV email: <bgillman@kinect.co.nz>
Need another person to join us

### Appointed Officers

*Awards manager:*
Lynette McDonald ZL1LL
*Contest manager:* Still to be filled
*Sponsorship Secretary:*
Celia Reed ZL1ALK
*Librarian / Archivist:*
Joline Beale ZL1UJB
*Break-In Columnist:*
Ngaire Jury ZL2UJT.
Topsy Scott ZL2LS
*Bulletin Editor:* Bev Osborne ZL1OS
*Official Broadcast Co-Coordinator:*
Rosemary Basher ZL1RO

### NZ WARO Achievement Award 2013

WARO's Executive endorsed the nomination of Joline Beale ZL1UJB to be awarded the NZ WARO Achievement Award.

Joline ZL1UJB was licensed in 1996 and joined WARO in 1997. At the WARO AGM in that year she offered to co-produce the WARO Bulletin and she has been a member of the WARO Executive continuously ever since. Her roles have also included that of WARO Bulletin Editor for three years, committee member, Librarian, and then Librarian/Archivist for the past 7years.

A talented story teller, Joline has written great many articles for the WARO Bulletin on a wide range of subjects, and often at very short notice when copy for an issue was scarce. WARO's 50th birthday book is the result of the year of effort that Joline undertook to collect a profile from almost every living WARO member. She then compiled the birthday book, organised the printing, and distributed a copy of the book to each member of WARO.

Words like enthusiastic and encouraging come to mind when we think of Joline. She seeks out newly licensed YLs and befriends and encourages them as they settle into our hobby.

At local level Joline and her OM Morris ZL1ANF attend market days and WARO get togethers in the Waikato, Bay of Plenty and Auckland. She is regularly on the air on VHF with a group of YLs during the week. She is one of the net controllers on the Sunday night 2 metre YL Net. Joline is a keen supporter of WARO and a deserving recipient of the WARO Achievement Award

Congratulations Joline.

*WARO AGM attendees: Standing: Cathy ZL2ADK, Carina, Lynnette ZL1LL, Topsy ZL2LS, Maxine ZL1FW, Lynne ZL2LKW, Kaye ZL2KU, Marlene ZL1MYL, Sharon ZL1TJU, Joline ZL1UJB, Ngaire ZL1KN, Vaughan ZL1TGC, Jeanette ZL3DYL Seated: Heather ZL2TYF, Margaret ZL1MB, Shirley ZL2BPX.*

*Joline ZL1UJB receives Myrtle Earland Rosebowl.*

*Cathy (RH side) ZL2ADK presenting the trophy to Val ZL2FO (LH side) at the Branch 48 Meeting in Wanganui on the 10th June 2013.*

### Thelma Souper Contest Results

*Reported by Bev ZL1OS*
*YL Winners:*

1st Val Hawtree
2nd Jeanette Croker ZL3DYL
3rd Ngaire Jury ZL2UJT
*OM Winner*
1st Doug Birt ZL1BFS

Thank you to everyone who participated and made the Thelma Souper Memorial Award a lot of fun.

**ALARA Meet 2013**

This is to be held in October this year. All those intending to travel to this please contact Kathy ZL1ADK as it could be organised to travel as a group and maybe share accommodation, so if you thought you might like to go but didn't want to travel alone, here is your chance to go with the group.

**Newest Amateur**

Sharon Dawson from Icom sat and passed her Amateur Licence on the Sunday afternoon of Conference in secret, and was announced at the dinner on the Sunday night. It was lovely to have Sharon at our WARO meeting and congratulations from us all on your great achievement Sharon. Sharon's call-sign is ZL1TJU which used to belong to her late father Dave Dawson.

**Remember when?**

June/July 1966. Due to only two WARO members Jean ZL3AAR and Pat ZL1LD being the only members who attended the Conference being held in Nelson, the fifth AGM of WARO was unable to be held.

There was also Barbara ZL3CB and Peggy Elliott from Australia (who was on a working holiday) present at Conference. Peggy was given a warm welcome by the YL's and was presented with a silver spoon and a paua shell brooch. By the time July's *Break-In* had come out Peggy had obtained the call-sign ZL2KJ and was in Wellington by this stage.

Membership stands at 33, 25 transmitting and 8 associate members.

CQYL Night started July 1966 on the fourth Tuesday of each month, between the hours of 1900 and 2030. "just call CQYL between these hours and wait for the pile up" comment made.

The first YL directory was published this year and thanks were given to Thelma ZL2JO for her assistance.

The heading for the *Break-In* page was changed to WARO this year.

A committee was formed to investigate the possibility of awarding certificates to operators having contacts with YL members. Rules were prepared for the awards.

The bank Balance then as of the 31.05.1966 was £37 5 shillings and six pence.

Clarry ZL1BDZ from Te Awamutu was welcomed into WARO July 1966

President for WARO 1966 to 1967 was Rene Walker ZL4DG, who sat her exam in 1962

**Old Friends From Biny ZL2AZY**

Dorothy Johnson is the wife of Cliff Johnson K0GWI (Great White Indian) who sadly passed away some time ago. To think that Dorothy has kept all my letters and cards since 1982 is staggering. And to also be told they are on their way back to me!

Dorothy and Cliff we met in Wellington when I picked up Cliff on 2 m. He was having trouble with his Atlas transceiver that he had brought over with him from the States. So we invited them out to Makara to see if there was anything we could do to fix it. The upshot was that Mervyn swapped his Atlas for Cliff's. The idea was that Cliff and Dorothy could continue on their journey to the South Island whilst Mervyn repaired the faulty rig, which he did.

From that day onwards a lovely friendship blossomed to the extent that Dorothy and Cliff returned to New Zealand several times afterwards. They were so taken with New Zealand; they found themselves helping out a small country school in the Wanganui back blocks. I cannot recall how this came about but on one of their visits they brought a video machine to donate to the school and in those days it would have been a prize possession.

Dorothy and Cliff lived in Minneapolis. Fortunately for us we were to spend an overnight with them on one of our trips to the UK. Cliff at that time was not well but still able to be enthusiastic about ham radio. Dorothy was great on local history and one of her accomplishments was in taking photographs especially of heritage buildings/houses that were gradually being replaced. Photos invariably formed part of her Xmas Greetings.

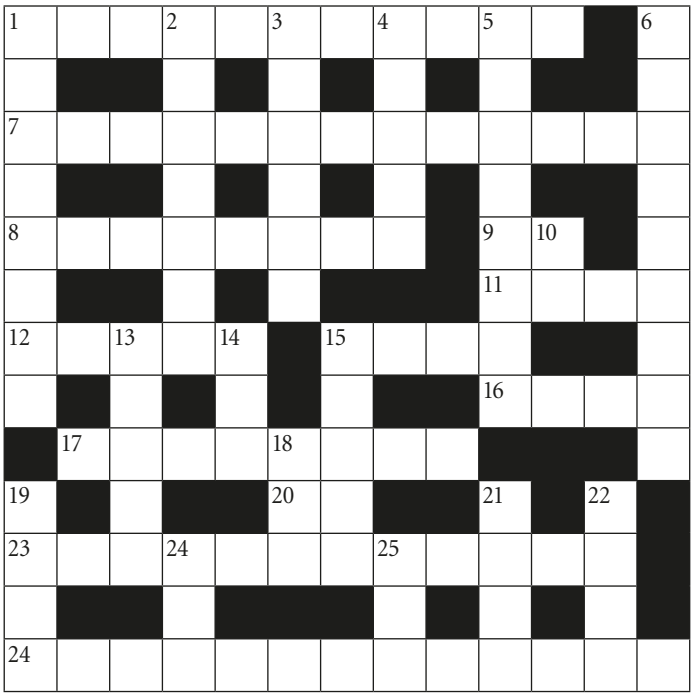
This leads me to wonder how many others have kept letters and correspondence over the years. Sad to think that e-mails have destroyed this and history will be hard to find.

Cheers & take care.

*Biny ZL2AZY*

# ZL Crossword No.23

*Compiled by Graeme Hunt ZL1ANH*



***Across***

1. Not a harmonic frequency (11)
7. The force in EMF (13)
8. Dipole antennas usually fed with open matched lines (8)
9. Abbrev for a continent north of the equator and west of 0° (2)
11. One billionth (4)
12. Mature human (5)
15. Major transport method in ZL before pakeha arrival (4)
16. Satirical theatrical sketch (4)
17. The whole range of radio frequencies (8)
20. The royal collective (2)
23. Between the troposphere and the mesosphere (12)
24. The process of converting AC to DC (13)

***Down***

1. Outdoor ham radio operating (5,3)
2. Unit for comparing voltage, signal and power levels (7)
3. Frequency _ _ _ _ _ _ generators in older radio gear (6)
4. Terms by which people are distinctively known (5)
5. Aerials (8)
6. Home of Monteith's Brewery (9)
10. Call them for your break-down (2)
13. Sideband mainly used for PSK31 and JT65 (5)
14. Muscle twitch (3)
15. They join electrical components (5)
18. Possible number of binary states (3)
19. Former emperor from UA1 to UA9 (4)
21. Transmitted a message (4)
22. Black on resistors (4)
24. Appropriate (3)
25. Trading as _ _ _, the largest multinational professional services company, present in ZL (3)

***Answers on page 42.***

# SPAM – Society For The Preservation Of Amplitude Modulation

Bill Olsen ZL4AE
<b_olsen@xtra.co.nz>

Greetings all. This edition we will start with a note from Martyn, ZL3CK. Hullo! I've restarted the email newsletter group following being "volunteered" at the Society AGM at Masterton. The late Roy ZL2KH produced a wonderful email newsletter for a long time.

Apologies if you already have been emailed if so ignore this! Have had quite a good response from the group to my first effort. I hope to put out the news letter at (in?) frequent intervals, as news and time allows. So, please join in, send me info, and pictures. We have Bill ZL4AE's column in *Break-In* to publicize our activities, and I'm happy to put in items for sale, or wanted too. Also anyone else you think may be interested let me know their address and I'll add it in. I send by 'blind email'. Waiting to hear from you!

Regards and 73! *Martyn ZL3CK* <martyn.seay@gmail.com>

After the newsletter Martyn received an email from Chris ZL2CU, about a website dedicated to the ZC1. It contains the URL. There are some nice pictures of the ZC1 and a lot of info about the radio. Here's the email:

Thanks for getting back to me and great to be back on the list. This is our website <http://www.zc1-radioclub.wellington.net.nz/>. We've been going for a few years and are a very small group based in Wellington. We don't have meetings or pay subs or anything, just a few guys whoshare an interest in the ZC1 and it's history. The National Library has downloaded our site for the last few years and it is now part of NZ's Digital Heritage collection. <http://nzlc.natlib.govt.nz/cgi bin/Pwebrecon.cgi?BBID=13174695>

Hope you enjoy our website. Cheers Chris

The bit about the historical station, Radio 4XD last month, brought a few memories from Martyn when he was a student at Otago University in Dunedin.

1970 was when I first tuned in. Even then I was a country music fan, and was immediately intrigued by the funny old-fashioned radio program where they still used those *"Bing Bong"* chimes to announce the time, and had no ads except for church programs on Sunday mornings! They also had "dedications" where the same people would ring up again and again for music requests every Saturday night. You could even hear them talking faintly on the phone when it was answered (live) in the studio! The telephone was manned by a little chap called Murray White; he came from I think "Wakowite" (Waikouaiti). He seemed to know a lot about the "Coffin Cheaters" which was (is?) the local Southland bikie gang, pronounced "Cheadrrrrs")

Anyway I was soon on the roster as a general 'gofer' and cuppa tea maker, and after a couple of years I was privileged to become the Sunday morning technician who had to get up early (yuk! I was still a student!) and go on motorbike in the snow and ice to the lean-to shed next to 'Calder Mackay's' and turn on the transmitter. Watch it go through the relay-delayed switch on sequence, and check the "Jewel" frequency meter sitting on top. Then quickly up McClaggan street to the studio, in an old unmarked two-story shop, and put on the big reel-to-reel tapes from "Oral Roberts University", the "Army of the Helping Hand" and other religious broadcasts.

I was there when 4XD celebrated their 50th anniversary in October 1972, a few months before the BBC, as 4XD is the oldest broadcasting station in the British Commonwealth. On the night, we had the first-time ever hook up with 4ZB and I was the lucky tech who pushed the switch connecting us up, and our broadcast was linked through the Commercial network. It was a short, commemorative tape-recorded broadcast. They even managed to find an original recording of the music played on the first broadcast in 1922 which was called "Hullo my Dearie!"

Later, the station broadcast from a shop window in the Octagon (I have photos somewhere to prove it) and had a wonderful celebratory dinner at "Glenfalloch" on the other side of the Otago Harbour

Memorable people I met there included AH Reed ("Call me AH sonny, not Mr Reed!") who used to do weekly readings from his many books, (AH & AW Reed, publishers). Josie Cooper who did the childrens' program for years and years; she wasn't young even then! Angus Foster was a mailman in his day job, Dave Silverstone who owned a joinery factory, Phil Holden who was the chief technical person, Lindsay Rackley who still broadcasts with Radio Dunedin, and Brian Lemin with the golden voice who 40 years later still works as a salesman nearby. I have a feeling Dave Mowat of RNZ started his career at 4XD but I could be mistaken. Mike Ryan started while I was there, and John Tonkin I think, always signed off with "..and Sleep well" which we said was actually a covert mattress advertisment!

I was lucky enough to get to meet Stan Hughes, who was Professor Jack's (see below) young Lab assistant when he was carrying out his pioneering tests in 1922. Stan used to come in regularly to the Dunedin City Council mobile library bus that I used to drive to Corstorphine in the evenings as a part-time job. He was still in his 70's an avid reader of scientific books.

Sadly, in due course, I moved away from Dunedin but retained my membership of the Association until it collapsed partly due to the misappropriation of funds by the then secretary, one of several very unfortunate events which overtook it in the 1980's. Admittedly the writing was on the wall when private radio was allowed to proceed legally in the mid 1970's. I remain saddened by the way in which the association's independance came to an end, but a select few members are still involved in Radio Dunedin and broadcast there still just for the fun of it. The Association remains, but no new members can join it.

The reason 4XD survived so long is interesting. The Otago Radio Association was a group of Dunedin enthusiasts who promoted radio broadcasting when it was cutting edge technology. They started with the equipment developed by Professor Robert Jack, the physics professor at Otago University. He had already made successful experimental broadcasts from the university. In the 1930's in Dunedin several radio shops established and ran their own radio stations for promotional reasons, and the Post Office licenses at the time allowed each station to broadcast in turn one or two nights a week. 4XD occupied Saturday, Sunday and Thursday (I think it was), and when the commercial stations were nationalised by the government in 1935, 4XD was permitted to continue only because it was non-profit, i.e. a hobby. So 4XD kept their license for only those 3 nights for all those years when private broadcasting was a punishable offence.

Regarding that old transmitter from the "Black Prince", I think it still exists. I visited Radio Dunedin in 2007 at the kind invitation of Lindsay Rackley, and so here's a photo of Lindsay in their tea room where the old transmitter was doing duty as a pot plant holder!

References – *"Voices in the Air"* by Peter Harcourt, *"An Independent Air"*, (The history of the Otago Radio Association) by Jim Sullivan.

Well that's all for the SPAM column this month. I still need copy for this column, At present the inbox is empty. There are lots of stories out there, memories and notes about AM sets of yore. At the recent Masterton conference I heard a heap of stories and met a lot of people with historical events and technical knowledge about many radio sets. But when I mentioned that they put that in writing and send it to me, there is a lot of back peddling! The main excuse being; "I am not good enough to write something for *Break-In*". Don't panic about that. The articles are easily edited, if necessary. My email address at the top.

Cheers.

*Bill ZL4AE*

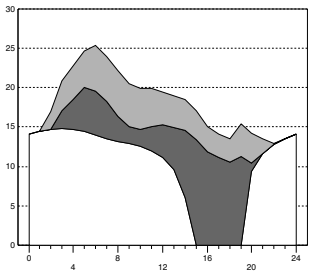
***Answers to crossword on page 41***

*Across:* 1 Fundamental, 7 electromotive, 8 doublets, 9 na, 11 nano, 12 adult, 15 waka, 16 skit, 17 spectrum, 20 we, 23 stratosphere, 24 rectification.

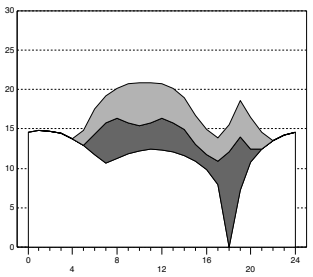
*Down:* 1 field day, 2 decibel, 3 marker, 4 names,5 antennas, 6 Greymouth,10 AA, 13 upper, 14 tic, 15 wires, 18 two, 19 tsar, 21 sent, 22 zero, 24 apt, 25 PWC.

# Ionospheric Predictions

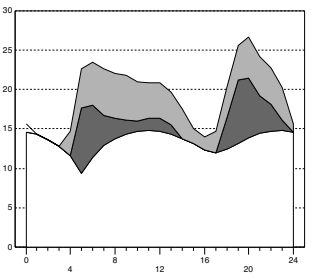
**SEPTEMBER / OCTOBER 2013 T-index = 67**



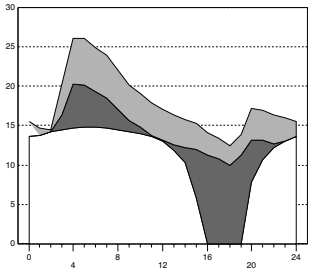
WN-
Moscow
(SP)
16548 km
312°



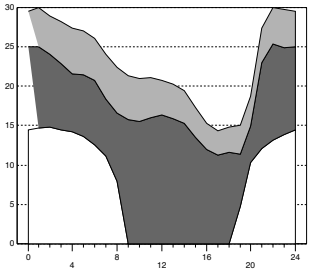
WN-
London
(SP)
18814 km
343°



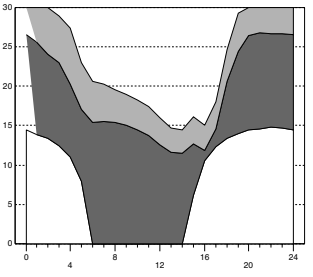
WN-
Jo'burg
(LP)
28265 km
31°



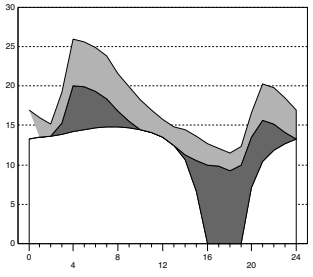
WN-
Istanbul
(SP)
17168 km
281°



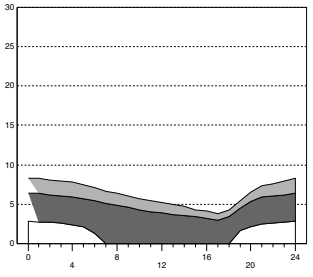
WN-
Tokyo
9274 km
332°



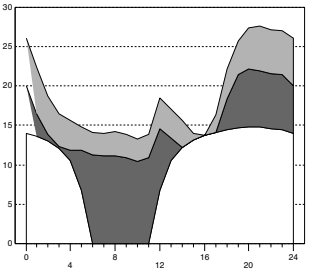
WN-
San
Francisco
10859 km
45°



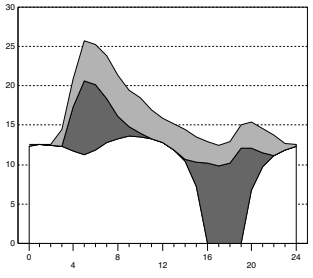
WN-
Cairo
16519 km
261°



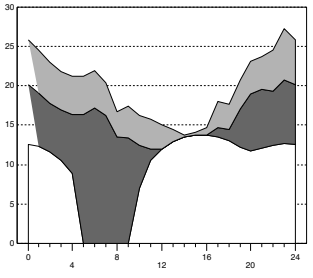
WN-
New
Zealand
300 km



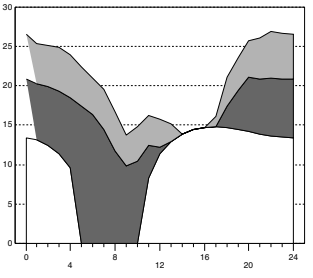
WN-
New
York
14402 km
66°



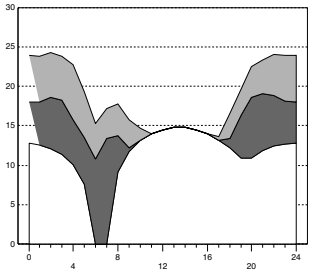
WN-
Jo'burg
(SP)
11759 km
211°



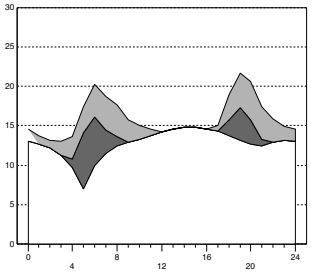
WN-
Rio de
Janeiro
11780 km
144°



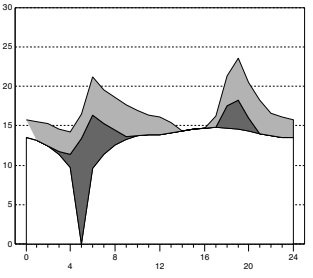
WN-
Barbados
13962 km
104°



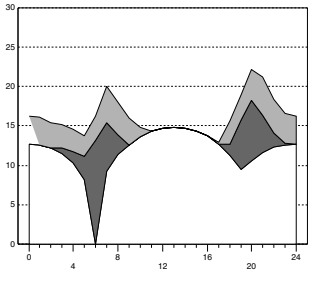
WN-
Dakar
16862 km
155°



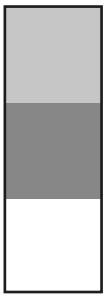
WN-
Moscow
(LP)
23476 km
132°



WN-
Istanbul
(LP)
22856 km
101°



WN-
London
(LP)
21210 km
163°




Horizontal axis shows time in UTC.

Vertical axis shows frequency.

Propagation is possible in the shaded areas, with best operation in the darker area.

These predictions are based on solar activity data supplied by IPS Radio and Space Services.

See pages 6–9, Break-In May/June 2004 "Choosing the Best Frequency" by the late John Gabites ZL2AQ for interpretation of forecasts and explanation of terms MUF, OWF and ALF.

# HAMADS



**WANTED RADIO VALVES:** Cash paid for old radio valve collections. Also wanted are vintage amplifiers ,speakers and tape decks. Please Telephone Paul at (09) 528-2022 or E-mail <paul.ssegrub01@gmail.com>.

**WANTED:** Kenwood AT250 Antenna Tuner complete with all connecting cables, RC Ranger AR 3500 10 m HF Transceiver or RCI Ranger 2950/70 10 m, all radios cosmetically good examples, clean and complete to add to my collection. Neil ZL1ALT. Telephone (07) 856-1054 or (027) 815-9129.

**WANTED:** Signal Strength Meter or parts of KW E-ZEE Transmatch KW107 or KW109. Kevin ZL3DAC. Telephone (03) 789-9875.

**WANTED:** Valves wanted to purchase, fair price paid, all types but esp following types ECC32 ECC33 ECC34 ECC35 B65 6SN7 6SL7 ECC81 ECC82 ECC83 ECC803S ECC88 E88CC E188CC 7308 EF86 KT61 KT66 KT88 EL34 EL37 PX4 PX25 GZ32 GZ33 GZ34 GZ37 CV378 CV575 VT52 45 50 211 801 805 845. Also looking for an AVO or Weston Valve Tester and a good quality capacitor tester. Geoff Edwards, Valve Radio Spares, 12 Oxford St., Lyttelton 8082. Telephone (03) 328-9208 or (027) 433-8452 or Fax (03) 328-9207 or E-mail <tubehead@xtra.co.nz>

**WANTED:** World War One military radio or telephone equipment or parts therof. Contact Ross Jowitt ZL1UND. Telephone (09) 236-3761 evenings or (027) 492-0048 or E-mail <rossjowitt@xtra.co.nz>

**WANTED:** Jones plugs and sockets; in-line type 4 pin, also chassis mount types with 4 male pins. Ivan Horn ZL2ATU. CallBook Address or E-mail <Loobie@kol.co.nz>

**LOW POWER FM / LPFM** tutorial and U.S. Ramsey brand 1, 50 watt pro-grade transmitters, antennas and accessories stocked in New Zealand. **<www.ramseypacific.tv>**; updated and expanding content. "We know low power FM broadcasting!" Ask at **<skyking@clear.net.nz>**; (09) 406-1282.

**WANTED:** Ham 3 4 T2x Rotator going or not also prop pitch motor. 3-1000 3CX1500 Or 3CX3000 valves BC Pulls OK. Zl1BBW. E-mail <calf4u@gmail.com>

**FOR SALE:** Kenwood TS930S Transceiver, AT230 Antenna Tuner, FW200 SWR Meter, coax leads, operation and service manuals, HTV-400B 8 band mobile antenna. All for $700. Colin Brown ZL1AQK. Telephone (09) 437-7992 or *Call Book* Address.

**FOR SALE:** B and K precision frequency counter Model 1851 520 MHz. Contact Fred ZL2TFT. Telephone (04) 569-8751 or E-mail <anni.fred36@orcon.net.nz>

**FOR SALE:** All in mint condition. Complete with Handbooks etc in original factory packing. 1 only Yaesu FT1000 Mark V Field with factory fitted Collins filters – $1800. 1 only SP8 Speaker to match above – $200. 1 only Kenwood TS2000. Hardly used - $1700. 1 only Kenwood MC60…S8 Desk Microphone never used – $200. 1 only Yaesu FT897D complete with Yaesu FC-30 Antenna Tuner and a LDG voltage/power/swr/modulation meter included – $1500. Little used. Great portable or base station. This set has never left my office. Contact Ross Meban ZL2RWM. Telephone (06) 867-3402 or E-mail <rmeban@slingshot.co.nz>

**FOR SALE:** Wide selection of multi-turn potentionmeters ("Helipots") and dials for sale. Contact John ZL3IB for details and list. Telephone (03) 348-9084 or E-mail <john.zl3ib@ihug.co.nz>

**FOR SALE:** Yaesu CPU-2500R 2 m FM Transceiver, 2-25 W, 4 memories & scan, mobile-mount DTMF-mic, original carton and manual, good working order – $225. ZL2AFT. Telephone (06) 358-8403 or E-mail <zl2aft@clear.net.nz>

**Hamads and Classified Advertising in *Break-In***

Hamads up to 30 words are now free as a service to members but the following conditions will apply:

(1) Hamads. A single, free Hamad in each issue of *Break-In* is only available to financial members and Branches of NZART buying or selling personal equipment. Members and Branches wishing to use this service must include their NZART Membership Number or other evidence of membership. If possible they should use the official HAMAD form (on the reverse of their address sheet). If this is not convenient the advert may be emailed or sent typed double-spaced, but proof of current membership must be provided.

Each free Hamad is limited to 30 words; any extra words will be charged at the current rate of 25c per word, telephone and fax numbers count as two words each, e-mail addresses and *Call Book* address as three words each. All prices include GST. Free Hamads will also be accepted for sales of deceased estates where the member was a financial member of NZART during the past 12 months and from branches who are financial members of NZART (ie have a Membership No).

Advertisements are accepted in good faith from amateurs and may only be used be the sale of used radio and allied equipment. The Association, or its representatives, can take no responsibility for them nor take part in any discussion resulting from sales or purchases; remember "Caveat emptor". In case of dispute, the Editor's decision is final.

Trade or business adverts, even from members, will not be accepted here, since this is a subsidised service to members.

(2) Classified Advertisements are available to members, non-members and commercial firms offering products or services for sale, etc. All adverts not meeting the Hamad criteria will be considered to be Classified Advertisements.

Classified Advertisements will be charged at 40c per word. Bold type is available at 50c per word. For semi-display (ie rule above and below) add $5.00. All Classified Advertisements must be pre-paid, receipts will not be given. All prices include GST.

(3) Display style adverts will be still be charged for at the current rates.

(4) Closing date. Please send Hamads and Classified Advertisements to The Advertising Manager, PO Box 1733, Christchurch, to be received no later than the 10th of the month prior to publication. Please make cheques payable to NZART; no cash or credit cards. The Editor and NZART Inc reserve the right to discontinue or decline any advertisement.

For further information and commercial advertising rates, please contact:
Lorne Douglas ZL2AHB, Advertising Manager, c/- PO Box 1733, Christchurch. Telephone (03) 358-9100. E-mail: <hamads@nzart.org.nz>.

Hamilton Amateur Radio Club

## MARKET DAY

**Saturday**
**17 August, 2013**

Waikato Table Tennis Stadium
Edgecumbe Street

Vendors from 8am
Buyers from 10am

Table space at $20 per metre (pre-paid) $25 per metre on the day.

All enquiries to:
Market Day
Hamilton Amateur Radio Club,
PO Box 606, Hamilton.
E-mail: harcmday@nzart.org.nz
Web http://zl1ux.org.nz/market_day.html

## EASTFEST 2013

### 7-8 September 2013

**Saturday 7 Sept 1000-1730 hr and**
**Sunday 8 Sept 0900-1230 hr.**
**Venue: Ashburton Senior Centre,**
**206 Cameron Street, Ashburton**

Following on from our initial EastFest of 2011 we have decided to hold another similar event this year with many talks and demonstrations of "hands on" ham radio.

Sunday afternoon will be a visit to the Aviation Museum at Ashburton Airport; hosted by Les ZL3UX.

We will provide morning and afternoon refreshments but not lunch or evening meals. However, a Saturday evening meal has been booked at the Ashburton Club and MSA, 231 Burnett Street, Ashburton at 1830 hr. Reasonable prices and to be paid on the night. Cost for the weekend will be $10 plus $10 entry for the Aviation Museum.

No registrations required, just turn up. Further information from Tony Buckland ZL3HAM <buckland@scorch.co.nz> or Jim Nelson ZL3ND <jim.nelson@xtra.co.nz>

*Attendees at the 2013 NZART Conference held in Masterton.*

*Flex radio screen.*

*Rare DX; Monk Apollo's QSL card.*

*ZL7LC's antenna setup on Chatham Island.*

*The ITSAT's optical display.*

*John ZL1ME's well-equipped Monitoring Service setup.*

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# IC-2820H

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## with D-STAR and GPS* *Optional UT-123 is required

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*Digital voice mode with GPS receiver**
**Optional UT-123 is required*

### VHF/UHF Dual Band
*50W output on both bands*

### Wideband Receiver
*With diversity receive capability*


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